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SPECIAL ISSUE

THE NEW ARMS TECHNOLOGY And What It Means



**MARY KALDOR • CHRISTOPHER PAINE • DAVID C. MORRISON
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THOMAS H. KARAS • STAN NORRIS • RICHARD J. BARNET**

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LETTERS.

THE DANGEROUS ABOLITIONISTS

Berkeley, Calif.

In his article, "The Nuclear Abolitionists" [*The Nation*, March 5], Sidney Lens writes that the "world will never be safe until the bomb is totally banned." But he fails to demonstrate how unilateral nuclear disarmament by the United States will contribute to the global banning of nuclear weapons. Does he expect that Britain, France and the Soviet Union, etc., will follow the American example? And if they don't, then how will the world have been made safer? After all, in the nearly forty years since the superpowers first possessed nuclear weapons, the only time they were ever used was against a country that didn't have them.

It is irresponsible to promote a political position just because it is likely to be popular; what is also required is that it make sense.

David Vogel

LENS REPLIES

Chicago

David Vogel pins his argument on an old bugaboo used by militarists to justify the arms race—unilateralism. If we get rid of all our weapons tomorrow morning, we will be vulnerable to a Soviet takeover. I have never met anyone, even among my closest pacifist friends, who proposed that the United States get rid of all of its weapons tomorrow morning. What abolitionists propose is that the United States *commit* itself to complete and total disarmament and that it then do two things: take unilateral initiatives, such as a reduction of stockpiles of, say, 20 to 30 percent, to create an atmosphere of trust and to get the process going; and negotiate multilaterally with other powers a timetable for total disarmament. I might point out that we could get rid of 95 percent of our 9,400 strategic nuclear weapons and 100 percent of our tactical weapons, and still have two submarine-based bombs (each one eight to sixteen times as powerful as the Hiroshima bomb) for every one of the Soviet Union's 218 cities with a population of 100,000 or more. The danger to America and the world is not unilateral disarmament but a multilateral arms race.

Sidney Lens

ANTI-SOVIETISM (CONT.)

Washington, D.C.

In a recent letter Stephen F. Cohen makes some comments about me that deserve correction [*The Nation*, Feb. 26]. He says his "Sovieticus" column "evoked an angry letter from Michael Parenti on behalf of the Soviet Union." My letter [Dec. 18] was not angry, only critical, and it was not evoked by Cohen's column but, as I wrote, by the many anti-left and anti-Soviet articles and reviews that have been appearing in *The Nation* in the last two years. Also, I did not write on behalf of the Soviet Union but on behalf of

myself and what I feel to be an important issue.

Cohen faults me for not "writing a single word about the substance" of his column and calls this a "familiar tactic" that "reveals something about Parenti but nothing about Soviet affairs." *The Nation's* Soviet expert can be nasty. He attacks his readers instead of their arguments. Actually my letter mentioned him only in passing and did quote several of his rhetorical phrases.

Moving from Cohen to more important matters, it is worth asking again: Isn't it time *The Nation* and others on the left submit their facile anti-Sovietism to the test of argument and evidence? We leftists do not unthinkingly embrace what the political-corporate-media-academic elites tell us about El Salvador, nuclear arms or U.S. corporations, yet we seem uncritically receptive to what they say about the Soviet Union. Haven't we been fed enough unsubstantiated assertions about totalitarian Kremlin power brokers and fanciful tales about K.G.B. agents under our beds?

Surely all criticism (even of the Soviet Union) can be scrutinized. Or does the prevailing orthodoxy have such a grip on us that one loses credibility by asking for dialogue and debate and by refusing to make the self-legitimizing anti-Soviet genuflection? If so, we on the left are once more making things easy for the cold warriors and the Red-baiters.

Michael Parenti

THE CHAINS OF FASHION

Sacramento, Calif.

Anna Shapiro's claim that fashion is liberatory, advanced in her review of Lois W. Banner's *American Beauty* ["Bustles and Bathing Suits," *The Nation*, March 12], misses the point of Banner's book and is itself filled with contradictions.

The wearing of stylish clothing may not be oppressive, but the obsession with doing so certainly is. "Fashion" today is an industrial process suiting the needs of clothing and cosmetic manufacturers. Shapiro's failure to acknowledge the origin of the day's fashion—designers, advertisers, publishers and media producers in the pay of large, usually male-dominated corporations—renders questionable her laudatory stance. To be "in fashion" means to surrender one's individuality for the chance to play around with industrially-supplied components within the narrow perimeters of what is declared "stylish."

Shapiro should be reminded that men as well as women are subject to this cultural management. Rather than trying to justify how fashion frees women, she should study how it actually imprisons both sexes. Both women and men in China have thrown off their Maoist "blues" (when they could afford Western-style goods), not to be in fashion but to protest the conformity forced upon them by economic necessity and ideo-

logical pronouncements. Fashion in America serves exactly the opposite function.

Robert Jacobson

SHAPIRO REPLIES

New York City

I would never claim that fashion is "liberatory"—it may be true or not, but it certainly isn't stylish. And whether I missed Banner's points or not—which would be hard, considering what dull old points most of them are—I'm afraid Jacobson has missed mine. Did he read the review? In it, I not only speak of the discomforts suffered by men on fashion's account but chastise Banner for failing to do so.

And I wonder whether he read the book, for to her credit Banner tries to write about fashion as a part of culture rather than as simply a series of artifacts manufactured and sold. One of the features of our fashion history Banner presents as uniquely American, if not revolutionary, is that many styles originated with working people, not designers.

As for contradictions, I can only wonder what they are, since he is—too kind?—to point them out. Perhaps he refers to the paradoxes I was at pains to describe. These may be disquieting, but you cannot wish them, or argue them, away.

Anna Shapiro

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EDITORIALS.

Atari Militarism

The military mind at work is a marvel of destructive invention. From the catapult to the Gatling gun to the MIRVed MX to particle beam weapons, the engineering of death has concentrated the attention (and resources) of powerful men as has no other human endeavor. In his speech on March 23, President Reagan described the futuristic hyper-tech military arsenal with undisguised rapture while lobbying the nation to support his trillion-dollar defense buildup. Last week the press corps ogled the Administration's Star Wars gimmickry like children set loose in Macy's video-game department at Christmas time. The biggest worry of the editorialists and the politicians seemed to be that the exotic engines of extermination might not work.

The Nation this week presents the issue of the new weapons technology—both “conventional” and nuclear—in a different context, informed by more fundamental concerns. Advances in weaponry not only make war worse; they place politics in a different frame. As Mary Kaldor notes in her introduction, the limitless power these weapons give national leaders “calls into question the nature of our political system.” Democracy was never envisioned as a political arrangement in which control over the life and death of millions of people would be placed in the hands of one or two leaders—who are themselves trapped in a gridlock of self-serving corporate, scientific and bureaucratic interests.

As Michael T. Klare, a fellow of the Institute for Policy Studies and consulting editor for this special issue, who joins our masthead as defense correspondent, writes in his article on “near-nuclear” technology:

Americans should not permit the new conventional weapons to enter production without first subjecting them to much greater public scrutiny than they have heretofore received. Modern conventional weapons may not threaten the survival of planet Earth, but they do threaten the survival of a great number of human beings and may, in the end, provide the spark for a nuclear cataclysm.

Slow Bay of Pigs

America's secret war in Nicaragua is not so secret anymore. The remnants of former dictator Somoza's brutal National Guard—trained, equipped and directed by U.S. military and intelligence agencies—are moving out of their camps on the Honduran border in increasing numbers, penetrating deeper into Nicaraguan territory and striking at economic and political targets. The Somocista platoons terrorize villages, disrupt commerce, sabotage transportation and communications. Their ultimate objective is the overthrow of the Sandinist revolution in Managua. But they have a long way to go.

The cover on the covert action was blown last winter by *Newsweek* and other publications, which ran astonishingly detailed reports on the U.S.-run training camps, the shipments of military equipment and the general plans for the Somocista invasion. The Reagan Administration never contradicted the reports or denied the details, but neither did it confirm the American involvement. Since then, the war has escalated in the field and in the headlines, but Washington remains silent on its role and steadfast in its fantastic assertion that the conflict is an "internal" affair of the Nicaraguans. No one except America's Honduran and Salvadoran proxies believes the official version; Jeane Kirkpatrick is utterly isolated when the issue is raised in the United Nations Security Council. But in Congress, opposition to Reagan's war has been slow to build, and the press seems to have upped its evidentiary demands from smoking guns to full confessions.

What is actually going on is an invasion by degrees, a slow Bay of Pigs, a stop-go counterrevolution waged without apology or explanation. Presidents have become more sophisticated in their foreign adventures since 1961, when John Kennedy sent a go-for-broke battalion to Cuba, or 1965, when Lyndon Johnson put 40,000 Marines ashore in the Dominican Republic to keep that country firmly in the American orbit. But after Vietnam, the United States became more circumspect about precipitous intervention in Third World affairs. The plan now is for cautiously increasing pressure to destabilize the Sandinists, to destroy Nicaragua's developing social order and cripple its vulnerable economy, to make life miserable for the people and to make government impossible for the revolutionary leadership.

The lesson of Cuba is still clear. Despite Kirkpatrick's claims, there is no internal military resistance to the Sandinists in Nicaragua, and the idea that an outside invasion force will be joined by a spontaneous uprising of the

populace is as absurd as it was in Cuba two decades ago. But the success of the new fallback strategy of invasion-by-attrition is not so assured as the Administration believes. It may require the use of Honduran troops alongside the Somocistas, with full U.S. support in the air and massive infusions of money and equipment. The Pentagon has already built a huge air traffic control facility in Honduras, and its purpose can hardly be to facilitate tourist flights to Tegucigalpa.

The major imponderable in the strategy is El Salvador. If the military position of the regime begins to collapse, Reagan might feel compelled to launch a broad offensive across the region, with American troops if possible, or with native gun-bearers if not. And that eventuality may be closer at hand than some observers now think.

When the Administration came into office, it put out the word that it wanted to "take one of *their* pieces off the board"; that "somebody armed by *us* must beat somebody armed by *them*." It tried Libya; that didn't come off. It worked on Poland; no-go there, either. Now the target is Nicaragua, and time is running out. It is a moment of enormous danger, not only for the Nicaraguans but for the region—and the hemisphere—as well.

F.B.I. Clearance

Relying on F.B.I. investigators to certify the bonafides of a political organization is a little like depending on the county coroner to give a body a clean bill of health. Their professions require that they look for the worst when examining their subjects, and they generally find it. Still, it's amusing to watch the F.B.I. wriggling out of its mandate to discover Soviet penetration of the U.S. peace and freeze movements—which finding was supposed to support President Reagan's baseless charges to that effect last November 11.

After months of investigation, the F.B.I. found that the Soviet Union does not "directly control or manipulate" the movements, nor have the Russians "achieved a dominant role" therein. The entire exercise was futile from the start; out of habit and predilection, Reagan Red-baited first and asked questions later. The F.B.I.'s answers—contained in a long, classified report, only twenty-seven pages of which were recently released—are full of assertions of the K.G.B.'s bad intentions and the movements' willful promotion of Soviet propaganda. But of direct links there are none.

The White House remains undaunted. A spokesman said that the report indeed "bears out the numerous ways the Soviets have tried to exploit and have influence on the peace movement," and thus vindicates Reagan's charges. The real danger is that the F.B.I. and its fans will now claim that strict attention to the rules protecting the civil liberties of citizens under investigation prohibited a finding of conspiracy, collusion and infiltration. If that happens, then the rules may be disregarded, rather than the rhetoric of accusation reduced.

SOVIETICUS.

STEPHEN F. COHEN

The United States has two Soviet problems. One is the real but manageable Soviet threat to our national security and international interests.

The second, and increasingly more serious, problem is Sovietophobia, or exaggerated fear of that Soviet threat. An old American political disease, Sovietophobia endangers democratic values, distorts budgetary priorities and menaces our national security by enhancing the prospect of nuclear war. Its symptoms include militarized thinking about American-Soviet relations, alarmist assertions about Soviet intentions and capabilities and baseless claims that the United States is imperiled by strategic "gaps."

After a brief remission in the 1960s and early 1970s, Sovietophobia has re-emerged in a form more dangerous than the cold war epidemic. It is the little-discussed political factor behind the Reagan Administration's shift from nuclear deterrence to a "nuclear warfighting" strategy, its extravagant defense budget and now its farfetched idea for a missile-immunity system. Public debate has focused myopically on the financial and technological merits of these radical military proposals; the real issue should be the ominous change in their underlying political purpose.

All evidence indicates that the Reagan Administration has abandoned both containment and détente, the political goals that have shaped American strategic doctrine since the 1940s, for a very different objective: destroying the Soviet Union as a world power and possibly even its Communist system. That, surely, is the meaning of Reagan's persistent talk about "destabilizing" and "prevailing over" the "evil empire," and his apparent unwillingness to negotiate a strategic arms agreement. It means a rejection of nuclear parity and a renewed and impossible quest for arms superiority, which is a potentially fatal form of Sovietophobia.

The only cure for Sovietophobia is to recognize it as a pathological rather than healthy response to the Soviet Union. Although the Soviet system is highly repressive at home and a dangerous adversary abroad, not even its most alarming behavior explains extreme American reactions.

The present wave of Sovietophobia began in the late 1970s with claims that the Soviet Union had perfidiously killed détente by building up its military forces and by its invasion of Afghanistan in December 1979. But that military buildup had been expected for years, since it fulfilled the longstanding and loudly proclaimed Soviet goal of achieving strategic parity with the United States. And the invasion of Afghanistan, while indefensible, came well after détente was already in a deep political crisis equally of our own making.

Clearly, there is a discrepancy between American perceptions and Soviet realities. Indeed, Americans habitually find in the Soviet Union only what they seek. Thus, Stalin's terroristic regime of the 1930s had many American admirers, while Brezhnev's far less repressive one had virtually none. In the 1950s, we exaggerated Soviet economic strength; now, we underestimate it. Sovietophobes insist, against all evidence, that no real improvements have occurred in the

Soviet system since Stalin, or they turn such changes as have occurred into new indictments. Thus, Soviet leaders are not commended for allowing 260,000 Jews to emigrate since 1971, only condemned for not permitting more to leave.

Misperceptions become especially dangerous when linked to interpretations of Soviet foreign policy. Against all logic, the Carter Administration interpreted the invasion of Afghanistan as a march toward the Persian Gulf, on the erroneous premise that the Soviet Union would soon need foreign oil. That worst-case scenario is forgotten, but its consequences live on in our ominously revised doctrines, huge military budget and abandonment of SALT II.

What causes such extreme misperceptions of the Soviet Union? Explanations that point to American anti-Communism or lack of knowledge are inadequate. Those factors have not prevented more balanced attitudes and policies toward China and several other Communist countries.

The real source of Sovietophobia is more fundamental: the United States, unlike most nations, still has not fully acknowledged that, whether we like it or not, the Soviet Union has become a legitimate great power with interests and entitlements in world affairs comparable to our own. Conceding political parity to the Soviet Union leads logically to nuclear agreements based on military parity and to other détente policies. Denying that status leads, as it always has, only to illusory quests for nuclear superiority and related anti-Soviet goals.

President Reagan's position is clear: the Soviet Union is "the focus of evil in the modern world" and thus an illegitimate power. But it is unfair and wrong to associate that ideology solely with him or the Republican Party. Hard-line Democrats opposed all aspects of détente throughout the 1970s, including SALT II. The problem is bipartisan, and a change of administrations will not necessarily solve it.

What the United States needs is a candid discussion focusing on the central, almost forbidden question: Are we ready, after three decades of political supremacy, to recognize the Soviet Union as a coequal legitimate power? We have never had this national discussion, partly because those politicians and policy intellectuals who might answer affirmatively in private still fear Sovietophobic charges of "appeasement," "soft on Communism" or worse.

These "opinion makers" should gain courage from the fact that large majorities of Americans have persistently favored strategic arms agreements, despite their dislike of the Soviet Union and susceptibility to political fear-mongering. (A valuable compilation of relevant opinion polls, by Tom W. Smith, will appear soon in *Public Opinion Quarterly*.) Indeed, a 1982 Harris poll found that 86 percent of Americans surveyed wanted such an agreement and 83 percent wanted better relations generally with the Soviet Union.

The American people, it seems, are ready to live with the Soviet Union as a superpower. The polls show they want real leadership, not Sovietophobia. If nothing else, all those Presidential candidates who will be running in 1984 should tell us where they stand on both of our Soviet problems.

ARTICLES.

■ INTRODUCTION

Technology and
The Arms Race

MARY KALDOR

Since World War II, the cost of individual weapons systems has risen at an average rate of 6 percent a year in constant dollars. Yet until the Reagan arms buildup, the military budget—with some fluctuations—remained roughly constant. As inflation pushed up costs, each year's defense budget would buy fewer weapons, but each new weapons system was seen by its manufacturers and by the Pentagon as a vast improvement over its predecessor. The 6 percent annual increase bought technological "improvements" in existing weapons that gave them greater destructiveness; less vulnerability; more speed, range or payload; or improved capabilities for detection, identification and navigation. Or it purchased new kinds of armaments like cruise missiles, nerve gases, laser weapons or remotely piloted vehicles. The arms race since 1945 has been a race in technology.

Military technology is not just knowledge and its application to hardware. It also represents the expenditure of billions of dollars and the hiring of people to produce that knowledge. Approximately 40 percent of what the nations of the world spend on research and development goes for weapons. About 25 percent of the world's scientists and engineers work on military projects. After so many dollars and people have been committed, it is very, very difficult not to apply the knowledge they produce. "There was never a moment's discussion as to whether the atomic bomb should be used or not," Winston Churchill wrote. Two billion dollars and four years of research had been expended. According to Maj. Gen. Leslie R. Groves, who was in charge of the Manhattan Project, "The President never had the opportunity to say, We *will* drop the bomb. All he could do was say no."

It is just as hard for a modern American President to say no to the production and deployment, if not use, of new or improved weapons systems. Today the enthusiasm of inventors has more powerful allies than ever before—huge corporations driven by competitive forces, bureaucrats seeking to advance their careers, branches of the armed services locked in rivalry and Congressmen up for re-election. On the rare occasions when political leaders do say no, they say yes to something else as compensation. When, after battling Congress, President Carter said no temporarily to production of the B-1 bomber, he said yes to the cruise missile family, with the devastating consequences that are de-

scribed in Christopher Paine's article on page 423.

Paradoxically, the invention of nuclear weapons could be said to have obscured the central problem of our time: the systematic application of science and technology to developing new techniques of destruction. This process began, not coincidentally in my view, in the nineteenth century at about the same time that private enterprise became involved in the manufacture of arms. Over the years, it led to a steady increase, punctuated by rapid advances in wartime, in the destructiveness of weapons. Even if nuclear weapons had not been invented, sooner or later weapons of mass destruction would have emerged. On page 438 Michael T. Klare describes the development of "near-nuclear," or "quasi-nuclear," weapons—"fuel-air explosives," cluster bombs, chemical warfare agents—that approach nuclear weapons in their lethality. It has been estimated that an aircraft equipped with the type of cluster bomb used by Israel in Lebanon has the same immediate destructive effect as a Lance missile equipped with a one-kiloton nuclear warhead. The weapons that could be invented in the newer areas of science such as molecular biology, which have so far not been co-opted by the military, defy imagination.

Yet the terrible destructive power of nuclear weapons may lead us to condone conventional weapons as a lesser evil. This is something new. After World War I, there was a widespread revulsion against war in all its forms. Yet a modern conventional war with the weapons now available could, in the words of a British lieutenant colonel, "recreate the conditions of 1914-15" . . . the carnage would be fearful with modern weapons making the World War I casualty lists look brief by comparison." Of course, there is always the risk of such a conflict escalating to nuclear war. The application of science and technology to nuclear weapons has also led to hideous increases in their destructiveness, so that were a cruise missile to be used, for example, the casualty lists of Hiroshima and Nagasaki would look small. But the problem is not nuclear weapons per se; it is the alliance between science and the military.

As the articles in this issue show, that alliance has also further dehumanized war, grossly magnifying the separation between the destroyer and the destroyed. The bomber pilots of World War II did not see the carnage that their bombs wrought among the civilian population. They *knew* what they did, but they did not *experience* the horrors of Dresden, Hamburg or Tokyo. This kind of warfare was very different from the face-to-face combat of the past, in which the enemy was seen as a human being and battle was a shared predicament. The fact that most Americans were detached from the human consequences of Vietnam made possible the widespread use of napalm, herbicides and "carpet bombing." The technology now being developed—space weapons, robotics, missiles to replace manned aircraft, remote command and control systems—will accentuate this trend. On a television program a couple of years ago, I saw an interview of a young man in the Strategic Air Command. Asked if he thought about the people against

Mary Kaldor is the author of *The Baroque Arsenal* (Hill and Wang).

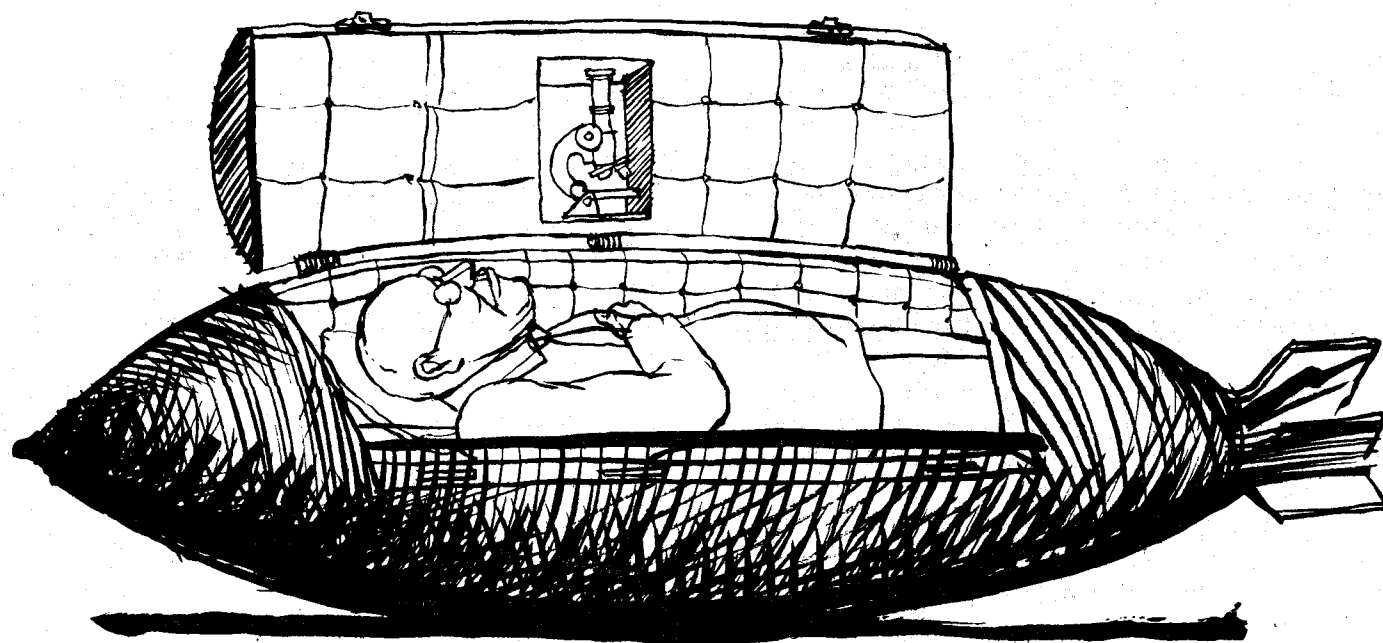
whom the bombs would be directed, he answered no, and when asked why, he said that he might become "kind of emotional." We are much more ready to accept killing by impersonal devices. The massacres at My Lai and Beirut were universally condemned; yet their consequences were no worse than those of various types of American or Israeli bombs. In previous wars, men *had* to think about the people they killed; war was understood to be a deep emotional experience. It is ironic that when, for the first time in history, the world's people have a global conception of humanity, it has become possible to conceive, though not to understand, the death of millions of human beings.

In addition to remoteness from the enemy, there is the complexity of modern military systems to consider. In theory, command and control are highly centralized, and one or two political leaders are responsible for decisions about the use of nuclear weapons. In practice, it is probably fair to say, no single individual has control. Just as production and deployment are, so to speak, programmed by the research and development effort that preceded them, so decisions to use them—which must be made within a half hour—would be preprogrammed by the thinking that went into production and deployment. On the one hand, the vulnerability and probable unreliability of various command and control systems is such that decisions may well have to be made by individual soldiers or bureaucrats lower down in the hierarchy. On the other hand, the information on which a decision is based is so complex and the consequences of it so awesome that it is difficult to imagine any individual, leader or not, making a decision that deviates from the scenarios for which modern weapons are designed—especially when the decision makers concerned are creatures of the same political environment that nurtures modern weapons. It would not be mad to approve the use of nuclear weapons because the madness was in their development, production and deployment. Indeed, it might seem mad, according to weapons logic, to say no.

These are the features of modern military technology—

destructiveness, remoteness from its victims, absence of individual control—that make future wars unwinnable. The weapons will kill millions, and because their consequences cannot be comprehended or controlled, a limited war with weapons of mass destruction is impossible. In the first chapter of *On War*, Clausewitz wrote about the contradiction between "Absolute War"—the tendency of war to escalate beyond all limits—and the use of warfare as an instrument of national policy. Today that contradiction has deepened to the point of absurdity. Strategists seem unable to grasp the fact that this panoply of military equipment cannot be used for political purposes. The nuclear arsenal could not help the United States win the Vietnam War. It could not rescue American hostages in Iran. It does not help the Soviet Union in Afghanistan. And yet the strategists continue to treat nuclear and near-nuclear weapons as though they were no different from weapons of the past.

Everything has changed, said Einstein, "save our mode of thinking." And the strategists have tried to preserve their mode of thinking by designing weapons that are supposed to be usable. Remoteness and lack of control may make use more likely whether it is intended or not. Improvements in missile accuracy, attempts to control the energy forms (heat, blast, radiation, etc.) released in a nuclear explosion, the development of counterforce weapons that are supposed to destroy only the enemy's weapons, strategic doctrines of "limited," "controlled" or "flexible" nuclear options—all these things are supposed to make the "rational" use of weapons possible, to establish the utility of nuclear bombs. In a 1967 interview (before he became a dissident), Andrei Sakharov anticipated President Reagan's March 23 speech calling upon scientists to perfect antiballistic missile technology. Sakharov asked: "Do you think there are crazy politicians and generals who would seize on the creation of such a 'shield' [an ABM defense] to argue that thermonuclear war would serve as a modern 'continuation of politics by other means'—to use the formula of Clausewitz? . . . If Clausewitz's formula were applied across the board in our



day and age, we would be dealing not with the 'continuation of politics by other means' but with the total self-destruction of civilization despite the existence of a 'shield.' "

During the 1960s and 1970s, the Clausewitz formula was the subject of much debate in Soviet military journals. Yet the Russians could no more resolve the debate than could the Americans. U.S. strategists talk about "prevailing" instead of "winning," but whatever word they use, the people who design and develop military technology have not comprehended the true nature of modern warfare. The Richard Perles and Edward Tellers of this world, as amply illustrated in Paine's article, are still imagining circumstances in which weapons would be rationally used. If we continue to spend more on defense, and if political, economic and social conditions worsen, the frustration of politicians and others with their unusable stockpile is bound to increase. In the end, utility can only be proved by use. Therein lies the danger of war.

We should not, however, be worrying only about the ultimate catastrophe. What is so insidious about the elaborate apparatus of military technology is what it is doing to us here and now. In a sense, the future of civilization may be threatened even without the launching of a missile or the dropping of a bomb.

Weaponry has become the symbolic form of power in our society. E.P. Thompson has described the MX missile system as "giant menhirs pointing to the sky" which "perform for 'the free West' not a military but a spiritual function." Our leaders, were they more self-aware, might choose to be buried with model MXs on their chests. The missiles represent the power our leaders exert over life itself; it is they who are ultimately responsible for whether we live or die. No leader in any previous society enjoyed such power.

Such power calls into question the nature of our political system. In what sense can we be said to live in a democracy when the responsibility for mass destruction is in the hands of one or two leaders? Or worse, when those leaders may not even be capable of exercising their responsibility, since they are bound by a network of interlocking scientific, industrial and military institutions? The most they can do is to say no; in that case, what difference does it make whom we choose as leaders?

Reverence for military technology, moreover, extends

beyond politics. Our economy is depleted by the dragooning of skills and talents into its service. But even more important, that effort has perverted our notion of what progress is. The nineteenth century equated progress with science and technology. The twentieth century equates science and technology with weaponry. We have come to view military technology as the epitome of what is advanced. To knock out a cup of tea in Moscow with a laser beam aimed from a satellite in outer space, or to build fully automated assembly lines for nuclear warheads—these are examples of advanced technology. We have abandoned or forgotten the nineteenth-century idea of progress as the ability to fulfill needs more simply and efficiently.

Our notion of advanced technology has pervaded every aspect of social and economic life. We invest in supersonic airliners instead of trains and buses, in supersonic machines instead of prenatal care, in artificial hearts instead of care for the aged, in nuclear energy instead of energy conservation, in solar orbiting systems instead of windmills or solar panels, and so on. Economic stagnation, depletion of resources, the devastation of the natural environment are all consequences of "advanced" technology. And in underdeveloped countries where elites have adopted what is sometimes described as the armament culture, the marginalization of the rural population to pay for modern technological projects in the towns has caused the catastrophic combination of hunger, violence and disease that could kill as many people over the next decade as might be killed in war. Yet science and technology applied in a truly progressive sense could help to solve the major problems of our time.

Then there are the consequences for how we organize ourselves. Modern military technology is highly complex. Typically, it entails a hierarchical division of labor, a centralized command system and an elaborate security network. These characteristics have come to be viewed as the characteristics of advanced technology in general, although there is no a priori reason that this should be so. This has contributed to a widespread sense of individual alienation, anomie and oppression. This is especially true for women, since military technology is associated with traditionally male values (heroism, strength, domination, for example) and modern weapons and military terms are often imbued with sexual imagery. Christa Wolf has written of the grotesque practice by which "women's names are inscribed on the rumps of rockets."

But above all, what does it mean to live with the knowledge of mass destruction? Can we call ourselves civilized when we possess weapons that previous societies would have regarded as unbelievably barbaric? What happens to future generations brought up to condone the possession of such weapons? Can they preserve the values of care, compassion or mercy that we regard as civilized? What is the future of thought when children are taught that reason guides an Edward Teller? Or of literature when the language of weapon-speak is deliberately used to conceal reality? The reaction to military technology and its associated consequences—the degradation of politics, economic and ecological deprivation, the helplessness of the individual—is often a reaction

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against progress itself, a yearning to return to the pre-industrial age or even earlier. Perhaps the greatest tragedy would be the loss of that optimism and hope for human liberation that originally inspired civilization and the discovery of science and technology itself. □

TACTICS

Reagatomics, or How to 'Prevail'

CHRISTOPHER PAINE

Over the last two years, the Reagan Administration has made clear its unequivocal intention to equip U.S. nuclear forces with the kinds of weapons and control systems that will enable them not only to survive an initial thermonuclear exchange—this criterion having long been satisfied—but also to “endure” in a “protracted” nuclear war, enabling America to “prevail” over the Soviet Union in the post-holocaust ruins.

While this strategy is not quite the radical departure from SALT-era doctrines that some exiled Democratic Party defense officials would have us believe, it does represent a mindless intensification of established trends toward nuclear warfighting—trends which were moderated in the past by the competing notion of “stable” deterrence achieved through a negotiated balance of mutually invulnerable retaliatory forces.

The Reagan Administration's belief that one side or the other might actually prevail in some meaningful sense in a nuclear war is not a novel idea for either American or Soviet strategists. What is new is that this ghoulish delusion is being pursued in a time of overall nuclear parity between the superpowers—and of growing Soviet-American capabilities for conventional as well as tactical nuclear intervention overseas. Unlike the outcome of the Cuban missile crisis, in 1962, it is far from clear today that the Soviet Union would be willing to back down when its “vital” foreign interests clash with those of the United States. And both sides are becoming increasingly equipped for combat at every level of violence—conventional, chemical and nuclear—on the ladder of escalation leading to all-out nuclear war.

“Winning” a nuclear war was certainly American defense policy during the period from 1945 until the late 1960s, when the United States had first a nuclear monopoly and then massive but gradually waning superiority. Throughout most of this period, it possessed enough warheads and delivery vehicles to pre-emptively and severely damage both the conventional and nuclear war-making potential—military forces and war-supporting industry—of the Soviet Union.

Regardless of the possible consequences of such an American attack for Europe, and for the few American urban targets that might have been struck even then by Soviet nu-

Christopher Paine is the staff assistant for arms control with the Federation of American Scientists in Washington, D.C.

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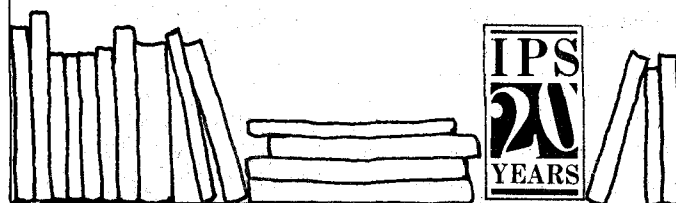
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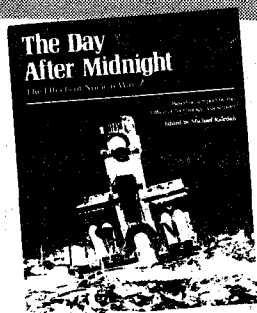
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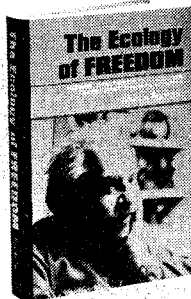
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clear weapons, U.S. leaders used their nuclear superiority as the basis for a policy promising massive retaliation against the Soviet Union in the event that its conventional forces threatened American interests abroad.

The Reagan Administration's belief that from the nettle of nuclear holocaust it can pluck a flower of victory, regardless of the millions of dead on both sides, is an idea as old as the atomic age itself. Indeed, much of what the Reagan Administration is saying and doing about nuclear weapons is alarmingly consistent with the views of those who were beguiled by the coercive possibilities of nuclear superiority in the mid-1950s. Thus Paul Nitze, Reagan's chief negotiator at the intermediate nuclear forces talks in Geneva, argued in a 1956 issue of *Foreign Affairs* that despite the Soviet ability to deploy thermonuclear weapons a thousand times more powerful than the bomb that destroyed Hiroshima, it would still be possible to "win decisively" when "the word 'win' is used to suggest a comparison of the postwar position of one of the adversaries with the postwar position of the other adversary." Nitze added, "The victor will be in a position to issue orders to the loser and the loser will have to obey them or face complete chaos or extinction."

Throughout the 1960s, even as Defense Secretary Robert McNamara was publicly enunciating that deterrence of nuclear attack through the threat of "mutual assured destruction" (defined as the eradication of 50 percent of a country's industrial base and 25 percent of its population) was all that could be reliably achieved by either side, the Pentagon continued to emphasize strikes against Soviet nuclear and conventional military installations. "Most of our planned targets were military forces," recalled Henry Rowen, a former Deputy Assistant Secretary of Defense and former president of the RAND Corporation, in a mid-1970s government study.

The Kennedy Administration did make an effort to move away from the massive retaliation doctrine of the Eisenhower years, chiefly by increasing reliance on conventional forces, but also by trying to introduce a measure of flexibility into the Pentagon's first Single Integrated Operational Plan (SIOP), the U.S. master blueprint for all-out nuclear war. Nevertheless, the small number of nuclear "options" that were devised, including a distinct "counter-military" option, "involved thousands of weapons," Rowen admitted. Given the relative inaccuracy of the then-new intercontinental and submarine-launched ballistic missiles, the megaton-range yields of most warheads in the strategic arsenal and the location of important military targets in and around cities, McNamara's RAND-inspired vision of a counterforce "no cities" option made little headway. The Air Force's traditional doctrine of an "optimum mix" of weapons delivered more or less simultaneously against "nuclear threat," "other military forces" and "urban-industrial" targets remained dominant.

But by the end of the 1960s, Rowen wrote, "increases in the number, hardness, and mobility of Soviet long-range nuclear forces . . . resulted in a decline in damage expectancy for this class of [military] targets." In other words, American nuclear superiority was ebbing. The Soviet Union

was acquiring an increasing capacity to mount a devastating retaliation even after absorbing an American pre-emptive attack. Thus the United States was no longer able to threaten nuclear attacks on Moscow's military forces without worrying about the so-called "bonus" effects on Soviet civilians and industry. If the threats to use nuclear weapons in response to Soviet conventional attacks on overseas U.S. interests were to be preserved, some plausible way of managing and controlling nuclear escalation had to be found.

In 1974, Secretary of Defense James Schlesinger announced that U.S. nuclear war plans had been revised to take account of these new realities. Since the United States could no longer count on disarming the Soviet Union in a pre-emptive strike, and since antimissile weapons and civil defense schemes were technological and fiscal pipe dreams, some other means had to be developed for maintaining the credibility of U.S. nuclear threats.

It would be secured, Schlesinger announced, by instituting an array of preplanned "limited nuclear options," "tailored" to the scale of various Soviet provocations. In other words, the threat of Soviet nuclear retaliation or escalation might be "controlled" through the use of limited nuclear attacks that would redress the particular military situation at issue while providing the Soviet Union with an "incentive"—or at least an opportunity—to back down before destruction became widespread.

During the Carter Administration, this tit-for-tat strategy—which Schlesinger indicated could be "enhanced" by improved "hard-target kill capability"—took on an increasingly countermilitary cast. Described by Secretary of Defense Harold Brown as the "countervailing strategy," it was formally endorsed as government policy in Presidential Directive 59, signed by Carter in July 1980. According to a *New York Times* account by Richard Burt, who at the time was the paper's national security correspondent and now is Assistant Secretary of State for European Affairs, PD-59 "requires American forces to be able to undertake precise limited nuclear strikes against military facilities in the Soviet Union, including missile bases and troop concentrations . . . [and] to develop the capacity to threaten Soviet political leaders in their underground shelters in time of war."

Thus the trend toward a nuclear warfighting posture was already well entrenched in the national security establishment by the time the wild-eyed practitioners of Reagatomics descended on Washington from their outposts at TRW, Boeing, Bechtel and the Committee on the Present Danger.

Nevertheless, a fair number within this "neo-hawk" fraternity believe that countervailing nuclear threats—the Nixon/Ford/Carter strategy—are not enough. They argue that to be fully credible, the U.S. nuclear deterrent must have the capability of limiting damage to the United States in a protracted nuclear war. Ideally, they say, this capability would be composed of an imposing pre-emptive threat against Soviet missile silos, submarines, bombers, warning systems, command and control systems and air defenses; an "active" antiballistic missile (ABM) defense against any

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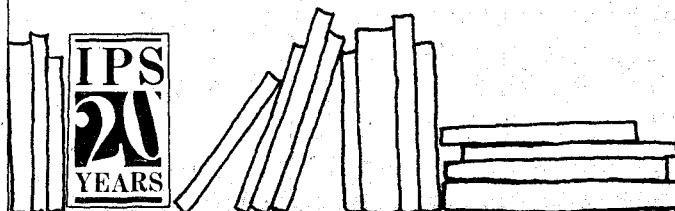
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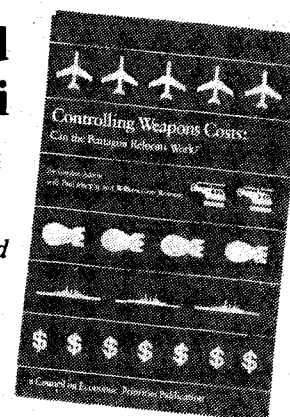
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"residual" Soviet re-entry vehicles that escaped destruction in a pre-emptive U.S. attack; and "passive" civil defense measures such as evacuation from "high risk" areas and "expedient shelters" against fallout from any nuclear warheads that penetrate the ABM system and explode on American territory. Looking toward the future, they advocate yet another layer of defenses be deployed in space—the zone they call the "high frontier"—to further reduce the size of any residual Soviet retaliatory attack. With such an imposing array of offensive and defensive military capabilities behind them in a crisis, we are told, U.S. leaders would appear less afraid of war—and therefore more willing to pursue vital national interests eyeball-to-eyeball and fireball-to-fireball with the Russians.

As described in Congressional testimony by Richard DeLauer, Under Secretary of Defense for Research and Engineering and a former TRW vice president, a strategy of fully credible nuclear deterrence means that "we must improve the capability to control U.S. forces throughout crisis situations *up to and including protracted nuclear war*, improve the survivability and endurance of strategic offensive forces and intelligence resources, protect the U.S. population in order to reduce the risks of coercion and blackmail, and counter Soviet capabilities and initiatives by exploiting their weaknesses." (Emphasis added.)

The President's strategic program, DeLauer testified, "is designed to take control of the U.S./Soviet strategic balance and shape it to our benefit." To implement this program, Reagan would like the nation to buy 100 B-1B strategic bombers at an estimated total program cost of \$40 billion; more than 100 radar-evading, hi-tech "stealth" bombers (\$56 billion); 100 MX missiles (\$20 billion); 20 Trident submarines (\$30 billion); 480 Trident 2 submarine-launched missiles (\$30 billion-plus); 3,400 air-launched cruise missiles (ALCMs) and advanced stealth ALCMs (\$8 billion); 3,000 sea-launched cruise missiles (\$7 billion); bomber, missile and civil defense systems (\$29 billion); and "enduring" nuclear command, control, communications and intelligence (C³I) systems (\$22 billion)—for a grand total of at least \$242 billion. And that is just the beginning: recently the Administration has been toying with plans for the deployment of possibly thousands of lightweight and potentially mobile single-warhead intercontinental missiles that would cost another \$30 billion to \$40 billion. Then there is Reagan's provocative and risky proposal to deploy an ABM system in space—a project that could cost hundreds of billions of dollars for research alone.

In defense of this extremely expensive and unabashedly aggressive program, Gen. John W. Vessey, Chairman of the Joint Chiefs of Staff, testified before Congress in 1982 that the crux of America's security problem is that Soviet acquisition of a massive and survivable nuclear retaliatory force allows Moscow "to build an atmosphere in which they can pursue their own political objectives in the world without the United States threatening to interfere with their pursuit of those objectives." In a classic explication of the object of U.S. strategy, Vessey added: "We don't want a war and we certainly don't want a nuclear war. But at the same time we

don't want to be paralyzed by the fear of war as we pursue our economic, political, social and cultural objectives."

Eliminating constraints on U.S. freedom of action in the global arena while imposing such constraints on the Soviet Union is what most American policy makers mean when they speak of "maintaining deterrence." For Eugene Rostow, recently fired as chief of the Arms Control and Disarmament Agency, this means "confronting Soviet expansion . . . with the prospect of unacceptable risk, to which they have always responded with prudence." In effect, maintaining deterrence has become a quest for nuclear weapons and doctrines that will somehow convince Moscow that in moments of extreme crisis U.S. leaders might not be daunted by the prospect of unacceptable risk. Maintaining an ability to sow such doubts in the minds of Soviet leaders, we are told, is the essence of deterrence. When U.S. "vital interests" are at stake, these must somehow be made to appear more vital than even the immunity of American and allied citizens to nuclear attack; that is, the unacceptable risk of nuclear war must be manipulated in such a way as to make it appear less unacceptable to us than it is to the Russians.

Given the existence of massive conventional forces and tactical nuclear munitions on the Soviet side, and given the steady growth of an invulnerable long-range Soviet second-strike capability, the Pentagon's strategic logic now dictates that threats to begin the process of nuclear escalation—ostensibly to defend American interests in specific overseas theaters—can only be rendered credible by continuous modernization of U.S. nuclear and conventional warfighting capabilities "across the full spectrum of conflict," from brush-fire engagements to major regional conflicts and then to protracted intercontinental nuclear wars.

In order to convince the Russians that the United States is prepared to use its nuclear deterrent, America's vital interests must be shown to be at stake. This is the mission of U.S. "power projection" forces—the Rapid Deployment Force and other units formed for military intervention overseas. Once deployed, these forces must appear to be such a firm expression of Washington's commitment to protect its interests that the Russians could reasonably expect nuclear retaliation should they succeed in overrunning them.

To heighten such Soviet fears, the Reagan Administration is modernizing the tactical nuclear weapons stockpile and accelerating the production of "dual-capable" delivery systems, which could deliver nuclear or conventional munitions. Old F-4 Phantom attack planes in the Marine Air-Ground Task Force that were not certified for delivering nuclear weapons are being replaced by F-18 Hornets that are certified. Nonnuclear AV-8A Harrier jump-jets are being replaced by the nuclear-capable AV-8B. Nonnuclear 105-millimeter howitzers are being replaced by the dual-capable 155-millimeter gun, almost doubling the Marines' nuclear artillery arsenal. Army and Marine 8-inch howitzers will also be equipped to fire the W-79 "neutron" warhead, about 800 of which are now being stockpiled in the United States for potential deployment overseas.

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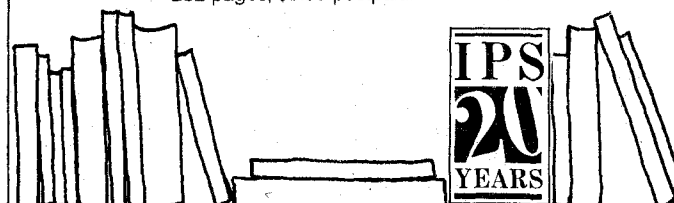
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Pentagon planners fear, however, that the threat to use these and other tactical nuclear systems may not appear particularly convincing in view of the matching capabilities of the Soviet Union. Indeed, the Reagan Administration believes that the credibility of this nuclear "first use" threat needs to be reinforced by regional and intercontinental nuclear forces designed to destroy Soviet nuclear forces or, failing that, at least to deprive the Soviet Union of limited nuclear options of the sort envisioned by former Defense Secretary Schlesinger.

Prime candidates for the regional warfare role in the Reagan Administration's nuclear master plan include the B-52H bomber and, beginning in 1986, the B-1B "long-range combat aircraft"; precision-guided Pershing 2 intermediate-range ballistic missiles; and ground- and sea-launched cruise missiles (GLCMs and SLCMs). These weapons provide the intermediate links in what Pentagon strategists like to think of as the "seamless web" of deterrence, falling between "conventional warfare options" and "execution of the Single Integrated Operational Plan."

Some Pentagon officials are evidently worried that Reagan's offer to forgo deployment of land-based intermediate-range missiles in Europe as part of a zero-option agreement with the Soviet Union could undermine the credibility of the "seamless web." According to Richard Perle, Assistant Secretary of Defense for International Security Policy, the President's proposal "will leave a gap. There is no question about that. We will not be able in the aftermath of the zero option, should that be approved in treaty form, to attack with missiles from Western European territory and strike targets in the Soviet homeland, and I know there is a concern about that." Perle hastened to reassure the Senate Armed Services Committee, however, that "the benefits [of this option] are significant benefits. They would leave our theater nuclear forces far more survivable than they are under circumstances of the SS-20 threat and we will retain other means of attacking targets in the Soviet homeland."

One of the other means Perle is counting on is the nuclear version of the Tomahawk cruise missile, a sea-launched variant of the missile Reagan is ostensibly offering not to deploy in Europe. Quite apart from the debate over comparative U.S.-Soviet nuclear warfighting capabilities in Europe, the mere existence of this program places the President's vaunted zero option in a rather different light. Incredibly, the only reference to the nuclear SLCM program in Defense Secretary Caspar Weinberger's fiscal 1984 "Annual Report to Congress" is this brief comment: "For the near term, we plan to deploy sea-launched cruise missiles with nuclear warheads on attack submarines and surface ships. These missiles will strengthen our nuclear capabilities by providing survivable forces that can strike the full range of enemy targets." Discussion of the nuclear Tomahawks in Weinberger's 1983 report was equally brief and unenlightening, making no reference to their deployment on surface ships, but suggesting that "these weapons will provide some near-term hard-target kill capability" while contributing to a "strategic reserve." (A "strategic reserve" is the force the Pentagon plans to withhold from the SIOP in order to main-

tain a nuclear force for "later protection and coercion" in the "post-attack environment.")

According to Adm. Frank B. Kelso, director of the Navy's Strategic Submarine Division, "We plan to deploy a small number of nuclear-armed cruise missiles on SSNs [nuclear attack submarines] starting in 1984 . . . None of these cruise missiles will be dedicated to the SIOP. Nuclear SLCMs will be part of the strategic reserve force and will be available for reconstitution and targeting, if necessary, during the post-SIOP periods." Admiral Kelso testified that these weapons would help the United States "retain a measure of coercive power in the post-exchange environment." Kelso did not indicate what would be left to shoot at after the United States had blanketed the Soviet Union with thousands of thermonuclear warheads.

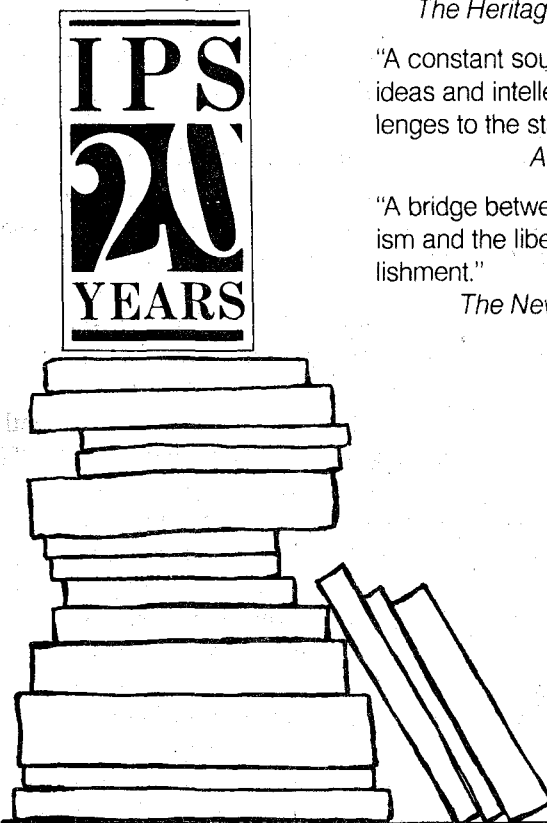
A less bizarre but more provocative role for the nuclear Tomahawk was also described by Admiral Kelso. This role, no doubt, is the real one. Since this missile is "not planned for commitment to the SIOP or the NATO general strike plan, it will be available for selective release in non-SIOP options . . . to provide extremely accurate strikes against theater targets." In other words, the nuclear SLCM could be used as at least a partial substitute for the land-based cruise missiles that would be prohibited by the President's zero-option proposal.

According to recent newspaper accounts, the Pentagon's long-range plans call for deployment of some 3,000 to 4,000 sea-based cruise missiles of all types by the early 1990s. The Administration suggested in 1982 that perhaps 400 of these might be nuclear armed; more recently it announced that the number has been raised to 1,000. How many ultimately will be produced and armed with nuclear warheads is anybody's guess, including the Russians'. The flagrant irresponsibility of this program can scarcely be exaggerated: several thousand cruise missiles deployed on more than 200 Navy vessels, all capable of delivering nuclear warheads to Soviet territory. How will the Russians be able to tell which Tomahawks are conventional and which are not? The nuclear SLCM represents a monstrous and wholly gratuitous complication for arms control—which is perhaps why the Reagan Administration is so enthusiastic about it.

And these are merely current plans. Given the enormous nuclear potential of the SLCM force, one may take it for granted that—short of a nuclear freeze, which would prevent production of cruise missile warheads—the Soviet Union will probably feel compelled to plan for the worst case and place additional missiles on its ships. As a result, U.S. forces will be more vulnerable and the surest American response will be a further, more dangerous expansion of its cruise missile arsenal. In the end it means running formidable risks to obtain what retired Admirals Elmo Zumwalt and Worth Bagley call "a long-range strike weapon for deterring regional aggression."

Zumwalt and Bagley suggest that the purpose of the nuclear SLCM is to create greater freedom of action for U.S. sea-based power projection forces. To rid themselves of the SLCM threat, the admirals argue, "the Soviets would have to launch simultaneous attacks against the [nuclear]

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strike-capable ships dispersed widely over regional waters. It is an impossible task." Not being able to prevent nuclear retaliation from the sea, they say, "Moscow cannot be expected to risk the use of nuclear weapons against our naval forces defending regional interests." In effect, the SLCM is being sold as the ticket to regional nuclear superiority.

However, because the Soviet Union also possesses intermediate-range weapons for fighting regional nuclear wars—such as SS-20 missiles and Backfire bombers—the outcome of a conflict fought at this level would by no means automatically favor the United States and its allies. This being the case, Pentagon planners reason that accurate U.S. intercontinental strategic nuclear weapons could pre-emptively destroy the Russians' ability to wage conventional and tactical nuclear war in specific theaters, while holding "collateral damage" in the rest of the Soviet Union to levels low enough to provide Moscow with an incentive for not escalating the conflict even further. Pentagon planners now appear to believe that as long as both sides are able to maintain control over a significant portion of their nuclear forces, they would stop short of launching an all-out nuclear attack on cities. These strategists believe, moreover, that a nuclear war confined largely to military targets could become quite protracted—lasting for days, weeks or even months.

If they are right, then the United States must have the ability to deter Moscow from launching limited strategic nuclear attacks by threatening the prompt destruction of Soviet counterforce weapons, particularly the more accurate ICBMs deployed in hardened silos. From a nuclear war-fighting perspective, if these missiles and their command and control systems are perceived as being vulnerable, an American President or a Soviet premier might be less inclined to threaten their deliberate limited use in a crisis, out

of fear that such threats might spark a pre-emptive attack. It follows from such reasoning that the side with the most accurate and survivable weapons will be able to "dominate" the process of nuclear escalation and achieve its national objectives, before the conflict becomes all-out nuclear war.

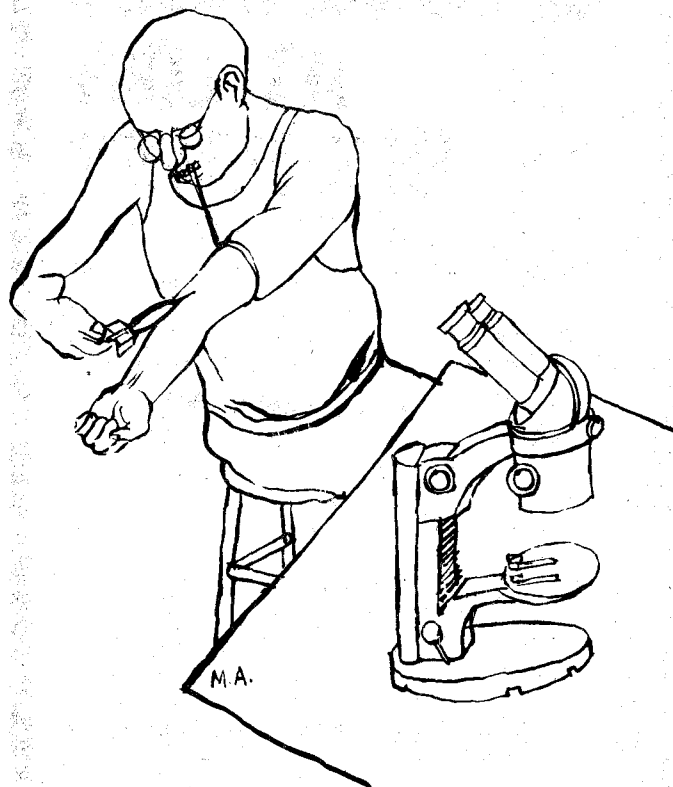
As interpreted by Gen. Bennie L. Davis, commander of the Strategic Air Command, this outlook means that "for combatant commanders to meet today's defense policy requirements, they must possess . . . strategic forces which are capable of destroying, neutralizing or disrupting the enemy in a measured and selective manner across the conflict spectrum, whether nuclear or conventional, spasmodic or protracted." In contrast with the strategy of the 1960s and early 1970s, Davis noted, "today we must provide flexible targeting options which destroy both hard and soft targets, yet keep civilian fatalities at the lowest possible level."

This is the principal reason, Davis explained to the Senate Armed Services Committee, that the Pentagon seeks deployment of the highly accurate MX missile. "As we go from a strategy of assured destruction to one which stresses war-fighting capability, that is, the priority targeting of military and leadership targets, you need weapons that are more accurate—that give you a capability against Soviet military and leadership elements."

It is essential, Davis argued, that we have ICBMs "with the accuracy, yield and range to place [Soviet] silos and launch control facilities at risk. We must insure our systems are so structured that the Soviets cannot perceive that their nuclear threat to the U.S. is afforded sanctuary status, either by time or distance." Because the newest generation of Soviet land-based missiles—SS-17s, SS-18s and SS-19s—are deployed in hardened protective silos, "we need MX as a prompt hard-target killer." Some aircraft weapons are also hard-target killers, he noted, but they are too slow. Only the MX "puts those fourth-generation [Soviet] missiles at risk."

Davis's sentiments were echoed by Deputy Under Secretary of Defense James P. Wade, who testified that the United States needs the MX because older missiles "do not have the accuracy to significantly help influence Soviet behavior in a crisis."

Like other military leaders, Davis invoked the "window of vulnerability"—the theoretical vulnerability of U.S. land-based ICBMs to a pre-emptive Soviet strike—as the driving force behind the Administration's big nuclear build-up. In reality, the Pentagon's imposing charts, with the ominous trend lines documenting the existence of the "window," are a complete setup. If we look at the counterforce capabilities of both superpowers, the "window of vulnerability" is actually wider on the Soviet side: the United States poses a greater pre-emptive threat to the *total* Soviet nuclear deterrent than the Soviet Union poses to the *total* U.S. deterrent. This is because about two thirds of the 7,500 Soviet strategic nuclear warheads are concentrated on 668 land-based SS-18 and SS-19 missiles. By contrast, only about one fourth of the 9,200-odd U.S. strategic warheads are concentrated in 1,054 silos, making the U.S. deterrent considerably



less vulnerable to destruction by surprise attack.

Once the MX and other counterforce weapons are in production, the next step on the Reagan agenda is acquiring a defensive warfighting capability, combining an antiballistic missile system and civil defense. Although always described as defensive weapons, ABMs could play an *offensive* role in a U.S. first strike, reducing the effects of Soviet retaliation by intercepting enemy missiles that survive an initial U.S. assault. In such a scenario, civil defense measures would provide shelter for the population from any Soviet weapons that do penetrate the ABM system.

In line with this long-term perspective, top military and civilian officials in the Reagan Administration have become openly hostile to the existing ABM treaty. Secretary of Defense Weinberger, for example, incorrectly informed the Senate Armed Services Committee last December that "there is no change in the treaty needed" if the Administration opts for an ABM system to defend the proposed "dense pack" MX deployment. Displaying (or feigning) ignorance of the fact that the 1972 ABM treaty and its 1974 protocol permit the United States to move its ABM system from Grand Forks, North Dakota, *only* to Washington, D.C., he testified, "Instead of Grand Forks, we could put an ABM system on Fort Warren, in Wyoming." Weinberger further declared, "I am fully prepared to make that notification any time it is determined that an ABM system be constructed The sooner we get to it, the better I like it."

According to Maj. Gen. Grayson Tate, the Army's Ballistic Missile Defense (BMD) Program manager, "this Administration has made it very plain that they intend to restore some sort of balance between offense and defense We have been told to accelerate the work we are doing on low-altitude defense." For fiscal 1984, the Administration is requesting \$709.3 million for BMD development, and the proposed funding for 1985 more than doubles that amount, to nearly \$1.6 billion. The only explanation Weinberger's fiscal 1984 annual report offers for this large expenditure in a field supposedly foreclosed by treaty is that the "program is structured . . . so that we could field an advanced and highly effective BMD system quickly should the need arise."

Indeed, this "need" could arise much sooner than most supporters of the ABM treaty would like. Having already discarded some thirty-five previous options in its search for a survivable MX basing mode, the Reagan Administration could well decide to forge ahead with a plan to deploy a low-altitude BMD system for the controversial missile.

And that is only one BMD option being studied. In his television address on March 23, President Reagan proposed an open-ended program to develop a whole array of antimissile systems. This effort, which according to Reagan "may not be accomplished before the end of this century," would make use of lasers, particle beam weapons and other space wars technology.

If President Reagan or his successors manage to abrogate the ABM treaty and deploy a ballistic missile defense system, then the only stone missing from the Administration's

nuclear warfighting arch would be a serious civil defense program. Predictably, the purveyors of Reagatomics have not neglected this area either. The Administration regards civil defense as a kind of psychic swagger stick for American leaders in a crisis, needed to convince Soviet leaders that we are quite as capable of self-delusion as they are, and therefore equally immune to nuclear coercion.

What is most disturbing, however, is the evidence that the President and his civil defense director, Louis Giuffrida, actually believe that civil defense would be effective. According to Giuffrida, the President has directed that the U.S. civil defense program be strengthened so as to "reduce the possibility that the United States could be coerced in time of crisis," and to "provide for survival of a substantial portion of the U.S. population in the event of a nuclear war . . . and for continuity of government."

Also critical to the attainment of the Administration's nuclear warfighting agenda is a major step-up in the testing and production of new nuclear warheads and bombs. According to Maj. Gen. William W. Hoover, director of the Office of Military Application in the Department of

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Energy, the nuclear weapons production complex is a "corporation" that would rank "in the top quarter of the Fortune 500," with sales of a "product line" that currently includes nine warheads. Strategic munitions now in production include the W-76 warhead for the Trident 1 missile, the W-78 warhead for the improved Minuteman 3 and the W-80 warhead for the air-launched cruise missile. Several

other warheads are in the final stages of development, including the W-87 for the MX missile's advanced ballistic re-entry vehicle (ABRV) and the B-83, a "modern strategic bomb that will be capable of high-speed, low-altitude delivery."

The Energy Department's theater nuclear product line currently includes a new lower-yield warhead for the

The Hydrogen Bomb in the Lab

If the anxious eighties promise unparalleled growth for the United States' \$23 billion nuclear warhead production industry, they also forebode unparalleled headaches. Closest at hand lies the herculean task of gearing up the Department of Energy's aging weapons manufacturing complex to meet the Reagan Administration's demand for 17,000 new warheads over the next ten years. Then, looming ominously ahead, is the possibility of a comprehensive test ban, which would shut down the Nevada Test Site, seriously crippling weapons research.

Ever resourceful, the Energy Department and its corporate contractors are moving out smartly to meet both threats.

"Our nuclear weapons industry," a D.O.E. official complained to the House Subcommittee on Procurement and Military Nuclear Systems last spring, "is suffering from some of the same problems that are plaguing the American automobile and steel industries." So the agency has launched a \$2 billion, five-year campaign to upgrade such facilities as a Los Alamos detonator lab housed in a World War II-vintage Quonset hut. Almost \$400 million of the D.O.E.'s \$5.3 billion 1983 nuclear weapons budget (up to \$6.1 billion in fiscal 1984) is dedicated to this renovation effort.

More urgent is the need to churn out sufficient fissionable materials for the twenty-odd varieties of warheads under production or development. Normally, these materials are recycled from retired weapons, but demand is now surging far ahead of supply. To close the widening plutonium gap, the D.O.E. is attempting to reactivate, in the face of growing community opposition, a now-idle plutonium reactor at Savannah River, South Carolina. At the Hanford, Washington, weapons complex it is converting one reactor from fuel-grade to weapons-grade plutonium production and is reactivating a processing plant. The agency will decide on a site for a new tritium reactor this year.

This flurry of activity is still business as usual, albeit on a vastly expanded scale. The threat posed by a possible freeze on underground testing, however, calls for extraordinary measures. The proposed solution—*inertial confinement fusion (I.C.F.)*—is, indeed, an extraordinary technological fix to a pressing political

problem. What the D.O.E. proposes is to detonate miniature hydrogen bombs in the laboratory.

The concept is relatively simple, but, as with development of the original atomic bomb, ironing out the wrinkles is the tough part. To achieve I.C.F., a tiny pellet filled with deuterium-tritium gas is bombarded with extremely powerful particle beams or lasers. Ideally, if temperatures reach 300 million degrees centigrade and the target is compressed hundreds of times within a billionth of a second, a thermonuclear explosion with a yield of approximately 0.1 ton results. Physicists pursuing parallel experiments at labs around the country are confident of reaching thermonuclear ignition within five to ten years.

Ten years ago, there was much confusion whether I.C.F. was an energy or a weapons program. Because I.C.F. energy production would be so complex—requiring the injection of ten fuel pellets per second into a reactor able to contain a continuous chain of mini-Hiroshimas—the program is now devoted solely to developing its near-term military potential, which is considerable. The laboratory H-bombs will help test the vulnerability of strategic systems to radiation and electromagnetic pulse, tests essential for verifying the actual warfighting capability of our nuclear arsenal. More important, as the Lawrence Livermore National Laboratory's I.C.F. prospectus puts it, "in the case of restricted testing or in C.T.B. [comprehensive test ban], experiments on these facilities will offer challenging opportunities for nuclear weapons design." Further, I.C.F.-related laser and particle beam research is spinning off important data for the Defense Department's own studies of pulsed-power weapons technology.

While the D.O.E. is enthusiastic about the prospects for successful I.C.F., it is clearly unhappy with the lukewarm support for the program in Congress, which allocated I.C.F. \$140 million for 1983, little more than it got last year. "We need to make clear," the president of the Sandia National Laboratories warned Congress last spring, "that such progress is in the public interest and that we should charge on at full speed."

DAVID C. MORRISON

David C. Morrison is a research analyst at the Center for Defense Information in Washington, D.C.

ground-launched cruise missile and an "air burst-surface burst" warhead for the Pershing 2. Also in production are enhanced radiation warheads for the Lance battlefield missile (W-70) and the 8-inch nuclear artillery projectile (W-79). The W-82 warhead for the widely deployed 155-millimeter howitzer is in the developmental stage, as is the W-81 warhead for the Navy's Standard 2 air defense missile.

All told, the Reagan Administration is planning the production of an estimated 17,000 new nuclear warheads over the next decade and the retirement of about 11,000 older warheads—a net increase of some 6,000, expanding the total arsenal from 26,000 to 32,000 warheads and bombs. Commenting on the huge increase in workload imposed by the Administration's "strategic modernization" program, General Hoover testified that the response of his organization, "like the rest of American industry, is to improve productivity." He added, "We feel strongly that we must have more new automation and computer-aided design and manufacturing techniques and robotics."

The Reagan Administration seems bent on resurrecting what Herman Kahn once called a "not-incredible first-strike" capability—an ability to counter the threat of Soviet conventional or limited nuclear attacks with a range of preemptive nuclear strikes that could "disarm" or at least severely damage Soviet nuclear forces in all theaters of operation. The Reagan Administration and its allies in the Pentagon and the weapons complex apparently believe they can approach this goal by judiciously manipulating the strategic balance through carefully circumscribed arms "reductions" while modernizing the American nuclear arsenal across the board.

The nuclear orthodoxy now propping up the newest round of the arms race is open to challenge on many fronts, not the least of which is that the composite portrait sketched here lends Reagatomics a degree of intellectual coherence it rarely achieves in practice. Reagatomics is actually a highly improvised intellectual pastiche whose chief function is to rationalize longstanding technocratic, industrial and anti-Soviet political interests.

Nuclear warfighting doctrine can be opposed on many grounds. First, placing the burden on Moscow of making a rational moral choice about whether to escalate in a dire crisis may not be the way to insure U.S. security; second, none of the nuclear warfighting weapons are likely to perform with the degrees of accuracy and reliability that the scenarios require; third, limiting a nuclear conflict requires assured communications with the enemy as well as one's own forces, something that is likely to be impossible in the radioactive frenzy of the nuclear battlefield; and fourth, efforts to negotiate meaningful arms control agreements will surely be overtaken by the rush to deploy new warfighting systems on both sides.

It may be safely predicted that this Administration will not attain a reliable and usable nuclear warfighting capability. But the Soviet-American enmity and the potential for miscalculation engendered by the quest for it contain the seeds of an unprecedented genocidal catastrophe. □

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C³I: Command Post For Armageddon

WILLIAM ARKIN AND PETER PRINGLE

When Robert McNamara, former Secretary of Defense and author of "mutual assured destruction," makes predictions on military matters, we had better listen. His latest forecast is that the United States is about to spend billions of dollars on something called C³I, and much of the money, according to McNamara, will probably be wasted. Worse still, the expenditure is likely to lessen our security rather than enhance it.

Pronounced "see cubed eye," this cryptic formula covers all of the Pentagon's activities dealing with command, control, communications and intelligence. The most important element is "strategic" C³I, that conglomeration of systems which supports nuclear weapons. It is the nervous system of the nuclear arsenal, the head of the scorpion. It has received little popular attention because it is difficult to focus on. It is not a single new war machine, like a missile, bomber or submarine; it's a vast heterogeneous system of early warning satellites, radars and computers, communications links, and underground and airborne control rooms—in short, the software that runs the hardware.

In the 1984 defense budget, \$31 billion is requested for C³I, of which more than a third would be allocated to the strategic programs. The rest would be spent on tactical communications, electronic warfare and intelligence. The system now in use collects, analyzes and processes highly sensitive information on subjects that range from Soviet strengths and weaknesses to nuclear war contingency plans. So highly secret is the information it gathers that military planners have been reluctant to discuss the system publicly—until recently, when the Pentagon launched a campaign to justify pouring additional billions into it.

Enthusiasm for C³I runs high in the Administration and among defense intellectuals. Secretary of Defense Caspar Weinberger has warned of a C³I "gap" with the Soviet Union. At the Pentagon, planners contend that the present system is outmoded and can't perform its two key functions: providing enough information to the right people during a surprise nuclear attack for the "right" decision to be made, and maintaining a system of command and communications once nuclear war begins.

The primary purpose of the operation of strategic C³I is to enable the President to remain in control of the nation's nuclear forces. In the 1950s and 1960s, when the Soviets had only a handful of not very accurate missiles, defense plan-

ners assumed that the President and his top military commanders would remain safe in their bunkers during a nuclear attack. Now the Russians have thousands of accurate missiles, only a fraction of which could render strategic C³I unusable. And so the additional money being spent to improve the system is an attempt to buy back the possibility of Presidential control. As we shall show, such a quest is illusory—and worse, it increases the danger of nuclear war.

The "problem" that C³I is supposed to solve is rooted in the nuclear doctrine adopted by Jimmy Carter in 1980 and embodied in his Presidential Directives 53, 58 and 59. PD-59 ordered a shift in nuclear targeting to give high priority to destroying the Soviet leadership and its C³I installations, and it introduced "endurance" as the chief criterion for this country's wartime command and control structure. The other directives are not nearly as well known. PD-53 authorized a national communications plan to insure the continued prosecution of a war at all levels and to "support flexible execution of retaliatory strikes during and after an enemy attack." PD-58 instituted new requirements for "continuity of government," calling for improvements in mobility, concealment and protection for the President and his successors. All these directives recognize the need for a communications system that could survive an initial attack and then be "reconstituted" to provide a continuing ability to communicate with, and thus to control, the forces during a prolonged nuclear war.

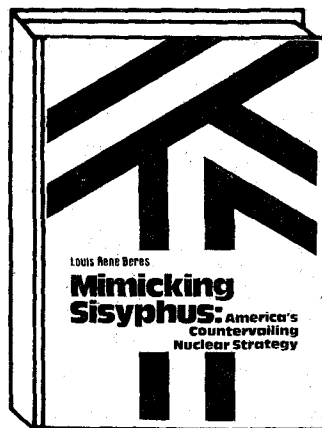
Despite its harsh pre-election criticisms of President Carter's defense policies, the new Administration wholeheartedly embraced these directives. President Reagan emphasized C³I problems in his major nuclear policy speech a year ago, and Congress has enthusiastically endorsed the program. But Carter and Reagan have not discovered anything new: the problems of detecting a missile attack, characterizing the attack, sending the coded Presidential commands to launch the triad of nuclear weapons and enabling the President to continue sending commands until the battle is won have existed since the Soviet Union gained a nuclear capability. In the past, planners never gave these problems their full attention because the military preferred to chase the will-o'-the-wisp of superiority by developing new generations of missiles, bombers or submarines. Few high-level officers bothered to learn about computers and communications, and the military career structure neither demanded nor rewarded expertise in such matters.

In retrospect, this lack of attention to the details of nuclear war plans by the military is a stunning lapse. And so is the fact that no President until Nixon took the trouble to review the procedures to be followed in the event of a war. Not that the generals minded the Presidents' lack of interest: no military commander worth his salt wants to have to wait for a politician to tell him when he can fire his big guns. Ever since Hiroshima, U.S. military leaders have fought to keep as much control as possible over the nuclear arsenal.

The new package that the Administration has put together to improve the nation's C³I facilities calls for placing more

William Arkin and Peter Pringle are the authors of SIOP: The Secret U.S. Plans for Nuclear War, to be published by W. W. Norton in the fall.

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sophisticated communications and surveillance satellites in space and modernizing the missile and bomber early warning radars along U.S. borders, across Canada and in Alaska, Greenland and England. Communications lines would be "hardened" by burying them and shielding them with steel and concrete. Such measures are also intended to protect the lines from saboteurs and from the electromagnetic pulses of nuclear blasts, which would otherwise render them useless. Improved communications with missile-bearing submarines is also on the agenda.

These measures may seem reasonable, even desirable. Indeed, people who are usually skeptical of Pentagon programs—advocates of arms control, for example—generally support the new emphasis on C³I. They argue that an upgraded system, with more reliable reporting on missile attacks, would help prevent a nuclear war from starting by accident. But the system is not being upgraded just to forestall a nuclear war; it is being improved to fight one.

The programs are intended to accomplish three main goals: early warning, more survivable command posts and new communications links. The new system will report more accurately the launching sites of enemy missiles, the number of missiles fired and the locations of their targets.

The proposed improvements in the early warning system go beyond merely making it more secure. To be sure, many of the programs—e.g., insuring that mobile ground terminals receive the signals transmitted by infrared early warning satellites that an attack is under way, or upgrading the satellites to prevent "spoofing" or jamming—are worthwhile. But billions of dollars have been allocated to construct new early warning stations and modernize the DEW Line radar facilities, and twelve new Awacs flying radar stations are on order. The reason for acquiring the new ground systems, C³I experts assert, is to improve the "assessment" of an attack. That sounds innocent enough—until you look at the fine print in the Defense Department's justification. The new equipment also has an offensive mission. It would provide precise details on the results of a U.S. nuclear strike and *then*, in the words of one Air Force report, "support the retaliatory process."

Some of the proposed changes in the command post setup seem removed from reality. The proposal to upgrade the command planes so that they can "survive a nuclear attack" is counter to Secretary Weinberger's testimony before the Senate Armed Services Committee in 1981 asserting that these planes "would not be expected to be available in the aftermath of nuclear exchanges." Another proposal suggests stationing the Presidential command plane farther inland because its present location—Andrews Air Force Base just outside Washington—is within easy range of enemy submarines. Four years ago, however, in a mock alert, President Carter was unable to reach Andrews within the prescribed time, so it is hard to see the advantage of placing his plane even farther away. Still another plan calls for the creation of mobile command centers in trucks. Those commanders who survive the destruction of the airborne and underground command posts would presumably run the country from Interstate highways. Equally bizarre is the

plan for constituting a national government amid the rubble, on the assumption, apparently, that people will survive even if the underground command posts don't.

As for communications, the emphasis is on reconstitutable communications relays, which could be set up quickly when regular facilities are destroyed. Among the schemes is the launching of new satellites or relay balloons. It is doubtful, however, that this emergency system would survive long since the Soviet Union has sufficient warheads to knock them out too. One of the most extensive programs is something called the Ground Wave Emergency Network (GWEN), a nationwide network of low-frequency radio stations. GWEN will, in theory, guarantee the transmission of military messages by automatically re-routing them on surviving links.

Finally, two satellite projects have especially sinister overtones. One is Milstar, a two-way communications satellite system now on the drawing boards, which is intended to replace a perfectly good Air Force satellite relay system, known as Afsatcom, that has been in operation since 1974. Nine hundred new Afsatcom receivers—aboard bombers, reconnaissance aircraft and submarines, in command posts and missile launch centers—will be operational in 1983 and provide the primary means by which the President can alert and direct the nuclear forces. Milstar, using small extra-high-frequency terminals and antennas, will extend the system to tactical nuclear weapons and increase its endurance. According to the Defense Department, it is designed "to provide survivable and enduring command and control . . . through all levels of conflict, including general nuclear war."

The second satellite system, code-named Forest Green and known as the Integrated Operational Nuclear Detection System (IONDS), is a set of over twenty nuclear-explosion detectors riding piggyback on navigational satellites. Their sole job is to report the location of nuclear detonations worldwide during a nuclear war. They would replace the two Vela satellites already in operation searching for experimental nuclear explosions or covert tests. But Forest Green sensors are not primarily intended for peacetime applications; they will be used during an extended nuclear war to help the generals redirect missiles whose primary targets have been blown up.

Even if the new gadgets work, they will not reduce the likelihood of nuclear war. No matter how sophisticated the sensors are, they cannot physically increase the warning time from the current thirty minutes for land-based missiles and as little as seven minutes for submarine-based missiles. That's how long it takes the missiles to fly from launch to impact. That's how long the President has to respond today, and that's as long as he will ever have. GWEN and other communications improvements will increase the probability that the warning messages will get through to the nuclear forces. But if the Russians target the C³I system itself, it is not expected to survive. As former Defense Secretary Harold Brown put it, "When you're in the crater [of a nuclear explosion], you're in the crater." No hardening or dispersal of command posts and communications networks can guarantee endurance.

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The very least the public might expect from the investment in C³I is a guarantee that the President or his civilian successor will control the nuclear arsenal. But that is also unlikely. The expensive, elaborate command and communications network that will be erected assures neither civilian nor military control. If warfighting machines like Forest Green/IONDS are built, the net effect would be the increased influence of the military in any decision to use nuclear weapons. The military, with its sophisticated sensors and computers giving it "real time" information on events as they happen, would be able to present persuasive arguments to the President that its information had more relevance than any political considerations.

To understand civilian control, a distinction must be made between what the commanders can do and what the rules say they should do. Today, it is physically possible for high-level military officers to circumvent the system and launch nuclear weapons without a Presidential order. Submarine commanders can launch their missiles should they lose contact with national command authorities following a nuclear attack. Procedures have also been established permitting officers at airborne command posts—the flying bunkers—to authorize the launching of missiles and bombers should they be the highest level of command surviving a nuclear attack.

Officially, the military will never be given more autonomy in decisions on the use of nuclear weapons, but whether they are or not will matter less and less. The new C³I system, with its emphasis on vulnerability of the command and control mechanisms, will serve to narrow the options of whoever is in charge, whoever has survived. A single response will be built into the structure of the system: to shoot. Today's nuclear battlefield no longer allows the luxury of Presidential control; there will be no breathing spaces during which a responsible decision could be made. If it is true, as the generals say, that the technology of nuclear weapons has now evolved to the point where the greatest danger is that the leadership itself will be destroyed, then, in planning our response to a Soviet nuclear attack, we have come full circle to automatic massive retaliation or nothing. There is no flexibility in the system anymore.

Defense intellectuals are beginning to drop hints that this is indeed the case. Last year, there was a cryptic exchange at an Air Force seminar on C³I between Edward Teller, the doting father of the American H-bomb, and retired Gen. Brent Scowcroft, formerly President Ford's national security adviser:

Teller: There is a question which, I am afraid we cannot, for many reasons, discuss in detail, but I would at least like to mention it. Has it been considered to concentrate the power of the President and his various successors on various levels, not only on commanding an attack—a counter attack—but on restraining the usefulness of the weapons, in such a manner that this restraining power automatically lapses unless renewed periodically, and it also lapses automatically under unmistakable signs of actual explosives hitting the United States? What I have in mind is a hierarchy where it does not pay the enemy to attack the top leadership because all they

do thereby is to lose the people with whom they can negotiate. . . . Has that been considered?

Scowcroft: You are very correct, Dr. Teller, we can't talk about it. Is that enough of an answer?

Teller: A little more than enough. Perhaps I have to apologize for mentioning that such an idea could even exist. □

■ NEAR-NUKES

The Conventional Weapons Fallacy

MICHAEL T. KLARE

For most of the post-World War II era, advances in military technology were largely confined to nuclear weapons; since Vietnam, however, there has been a revolution in conventional* weaponry, one which is changing the face of warfare more profoundly than at any time since the nuclear bombing of Hiroshima. Indeed, with the advent of "near-nuclear" weapons—conventional munitions with the destructive potential of tactical nuclear warheads—the critical "firebreak" between nuclear and conventional weaponry may disappear altogether.

The revolution in conventional weapons is being driven by a variety of interrelated technological advances: the introduction of "smart" weapons, or precision-guided munitions (PGMs), capable of sensing their intended targets and making in-flight course corrections so as to insure direct hits; the "clustering" of many "bomblets" into dispensing systems that can explode them over a wide area; the use of new explosives and warhead technologies that can endow conventional arms with near-nuclear blast capabilities; and the introduction of new "target acquisition" systems that enable planes and helicopters to pinpoint enemy forces far behind the front lines for attack by PGMs and cluster munitions.

These technologies have dramatically changed the way military strategists look at war. "The environment of future warfare is likely to differ greatly from any we have known in the past," the Pentagon notes in its "Defense Guidance" statement for fiscal 1984-88. "Combat against Soviet [and] Soviet-supplied forces will be of higher intensity and longer duration, with weapons of much greater accuracy and possibly higher rates of fire and mobility."

Elaborating on this theme before an audience of NATO

* Unfortunately, the term "conventional" is normally used as the designation for nonnuclear weapons, suggesting thereby that they are somehow more familiar or humane than nuclear weapons. In fact, conventional arms can be as unconventional as napalm and as indiscriminate as antipersonnel cluster bombs.

Michael T. Klare is a fellow of the Institute for Policy Studies in Washington, D.C., and the author of a forthcoming book on the conventional arms trade.

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"That's a matter of c-cubed-i. As for maintaining deterrence, we'll have our non-SIOP-dedicated SSNs and if we get the go-ahead on ABMs and BMDs, the enemy will find his SS-19s inutile."

"So that means green-light BOSS, WAMM and the Assault Breaker."

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officials, former Under Secretary of Defense for Research and Engineering William J. Perry said, "I can summarize this discussion on precision-guided and area munitions in one sentence: If you can see the target, you can expect to kill it." The combination of PGMs and advanced intelligence and delivery systems, he noted, "can make the battlefield untenable for most modern forces."

The development of new conventional arms began during the Vietnam War, when U.S. scientists sought to counteract the guerrillas' natural advantage of operating in remote and impenetrable jungles by developing sensing devices ("people sniffers" and the like) and wide-area (clustered) anti-personnel munitions. After the war, U.S. and European arms firms, looking for new products to sell, developed more sophisticated and costly systems for European or Middle Eastern battlefields. The end products of their efforts were what might be called "supersmart" weapons—PGMs capable of tracking moving targets (tanks, ships, aircraft) while in motion themselves. These weapons made their first public appearance last summer when the Argentines used their French-made Exocet missiles to sink a British destroyer and the Israelis used equally sophisticated systems to knock out Syrian missile batteries in Lebanon.

Another impetus to the new arms race is public opposition to NATO's nuclear weapons modernization program. Although continuing to push for the deployment of theater nuclear weapons on the Continent, European and American leaders have accelerated the development of sophisticated conventional weapons that could be substituted on an almost one-to-one basis for tactical nukes, should popular pressure force them to eliminate the latter. Because "there is a growing consensus that less reliance should be placed on use of nuclear weapons in response to a conventional Warsaw Pact attack," Georgia's Democratic Senator Sam Nunn told the Senate Armed Services Committee recently, "the importance of a credible conventional deterrent grows."

In line with this thinking, NATO officials recently approved a major shift in defense policy for Europe—the first such shift since the "flexible response" doctrine, which envisioned the use of tactical nuclear weapons as an intermediate step between conventional war and all-out nuclear war, was adopted in the early 1970s. The new policy—described as "deep strike" or "echelon targeting"—calls for PGMs that can devastate large areas to be used against Soviet airfields, communications facilities, tank formations and other "second echelon" forces located far behind the front lines. If these rear-area forces can be neutralized, the strategy assumes, the Russians will not be able to support or reinforce their front-line forces, which can then be destroyed by existing NATO armies.

"If you don't want to go nuclear," the chairman of NATO's Military Committee, Canadian Adm. Robert H. Falls noted recently, "you'd better have the capability to hit the second echelon behind the lines" with equivalent firepower. To provide this firepower, conventional weapons with the kill radius of small atomic bombs have been developed. These near-nuclear weapons use clustered warheads incorporating large numbers of individually guid-

ed submunitions, or bomblets, that are dispersed over a large area—as much as one square mile, or a hundred city blocks. "Long-range conventional weapons are now being developed," Senator Nunn disclosed last May, that "begin to approach the destructive potential of small-yield (2- to 3-kiloton) battlefield nuclear weapons."

The combination of these new weapons and the deep-strike strategy approved by NATO on December 1, 1982, is viewed by some policy makers as a way of strengthening European defense while reducing the risk of nuclear conflict. According to Nunn, "This new echelon-targeting doctrine has the potential to enhance conventional deterrence, raise the nuclear threshold and put new meaning into the strategy of forward defense." This supposition has also been advanced by some analysts in the arms control community who support a "no first use" policy along with an enhanced conventional defense capability. As we shall see, however, other analysts believe that the new conventional weapons will *lower* the nuclear threshold.

To comprehend fully the revolution in conventional arms and to assess its military, economic and arms control implications, we should become familiar with the major U.S. weapons systems involved. The Pentagon gives highest priority to producing weapons that can be used in the deep-strike strategy. Incorporating a variety of new technologies, they include:

§ **Advanced cluster munitions.** The various "cluster bomb units" (CBUs) developed during the Vietnam War have been improved to blanket much larger areas. CBUs normally comprise a dispensing system, which can be attached to the underside of an aircraft or packed into a missile warhead, and a multitude of bomblets. The earlier cluster systems used unguided "dumb" submunitions that were scattered in a random pattern over the battlefield; future systems will dispense smart submunitions, capable of seeking out enemy targets and exploding when they are within firing range. Advanced cluster dispensing systems now in development include the West German MW-1, the U.S. LADS (Low Altitude Dispensing System), the French Durandal runway cratering system (which the U.S. Air Force plans to purchase) and the British JP-233 dispensing system. Smart submunitions include Avco's "Skeet" infrared-homing antitank bomblet, Honeywell's SADARM (search-and-destroy antiarmor submunition) artillery-fired bomblet and General Dynamics' TGSM (terminally-guided submunition).

§ **Advanced "standoff" missile systems.** To deliver the new conventional munitions deep into enemy territory with the least possible risk to friendly forces, U.S. weapons designers are developing a new generation of "standoff" weapons that can seek the targets after being fired from a safe distance. Such systems will include surface-to-surface missiles (SSMs) and air-to-surface missiles (ASMs) loaded with smart submunitions and advanced guidance systems. Missiles of this type now in development include Vought's T-22, based on the Lance SSM, and Martin Marietta's T-16, based on the Patriot air-defense missile. Also being studied for this role are General Dynamics's medium-range

HOW MUCH IS TOO MUCH TO DRINK IF YOU'RE DRIVING?

USING THIS CHART MAY HELP YOU KNOW YOUR LIMIT.

First, you should understand that drinking any amount of alcohol can impair your ability to drive.

The generally accepted way to measure intoxication is by your Blood Alcohol Concentration (BAC). In most areas, the legal definition of intoxication is .10 percent BAC and above. However, long before you reach .10 BAC, your judgment and motor skills deteriorate rapidly. In fact, some states include the definition of impaired driving ability, which usually begins at .05 percent.

Important factors to keep in mind are how much you've drunk in a given period of time, how much you weigh and whether you've been eating. Your age, individual metabolism and experience with drinking are also factors. However, it simply is not true that beer or wine is less likely to make you drunk than so-called "hard" drinks. A 6-ounce glass of wine, a 12-ounce can of beer or 1½ ounces of 86-proof whiskey have about the same amount of alcohol and will have about the same effect on you.

How to estimate your Blood Alcohol Concentration. Although the effects of alcohol vary a great deal, the average effects are shown in the accompanying chart prepared by the National Highway Traffic Safety Administration. Find your weight in the left-hand column and then refer to the number of drinks you have had or intend to have over a two-hour period. For example, if you weigh 160 pounds and have had four beers over the first two hours you're drinking, your Blood Alcohol Concentration would be dangerously beyond .05 percent, and your driving ability would be seriously impaired—a dangerous driving situation. Six beers in the same period would give you a BAC of over .10 percent—the level generally accepted as proof of intoxication.

It is easier to get drunk than it is to get sober. The effects of drinking do taper off as the alcohol passes through your body, but the drop is slow. In the example above, the person who had six beers would still have significant traces of alcohol in his blood six hours later.

have any doubts, don't drive.

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Weight 1½ ozs. 86° Liquor or 12 ozs. Beer

Weight	1	2	3	4	5	6	7	8	9	10	11	12
100	1	2	3	4	5	6	7	8	9	10	11	12
120	1	2	3	4	5	6	7	8	9	10	11	12
140	1	2	3	4	5	6	7	8	9	10	11	12
160	1	2	3	4	5	6	7	8	9	10	11	12
180	1	2	3	4	5	6	7	8	9	10	11	12
200	1	2	3	4	5	6	7	8	9	10	11	12
220	1	2	3	4	5	6	7	8	9	10	11	12
240	1	2	3	4	5	6	7	8	9	10	11	12

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DRIVING IMPAIRED
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Source: NHTSA

The chart shows average responses. Younger people generally become impaired sooner, while older people have more vision problems at night. Tests show a wide range of responses even for people of the same age and weight. For some people, one drink may be too many.

Having a full stomach will postpone somewhat the effects of alcohol, but it will not keep you from becoming drunk.

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air-to-surface missile (MRASM), based on the Tomahawk cruise missile; Lockheed's Trident C-4 missile; and Martin Marietta's CAM-40, using the Pershing 2 missile.

§ **Advanced explosive technologies.** To enhance the new weapons' kill probability, military scientists have developed revolutionary explosives and warhead technologies. Among the most potent of these are the "fuel-air explosives" (FAEs), introduced toward the end of the Vietnam War. These munitions dispense a cloud of highly volatile fuel (ethylene oxide, propylene oxide or propane) which, when ignited, produces a powerful blast capable of leveling entire city blocks. An FAE of this type used in Vietnam, the BLU-82/B "Daisy Cutter," was described by observers as "the closest thing to a nuclear bomb." (FAEs may have also been used in the so-called "vacuum bomb" described by victims of Israeli air attacks on Beirut.) The Pentagon is now developing an advanced fuel-air munition, FAE 2, and other explosives. Also in development are novel munitions known as self-forging fragments (SFFs)—disks of metal that are shaped into conical projectiles by the force of ejection from explosive-filled submunitions like "Skeet." According to *Air Force* magazine, SFF technology is "a spinoff from the sophisticated computer analyses required to probe the kinetic and other processes that go on inside a detonating nuclear warhead."

These three weapons types are being developed under a number of little-known Pentagon programs that are likely to consume an ever-increasing share of the Defense Department budget. These programs utilize a variety of munitions, dispensers, delivery systems and sensors to seek out and destroy enemy rear-area targets. The most important programs are:

§ **Assault Breaker.** This program of the Army-Air Force-Defense Advanced Research Projects Agency (DARPA) is designed to produce a "standoff" guided missile armed with smart submunitions capable of destroying enemy airfields, tank formations and other second-echelon targets. According to Under Secretary of Defense Richard DeLauer, Assault Breaker is viewed by the Reagan Administration as one of its three top-priority armaments, along with the MX missile and the B-1 bomber. Competing experimental systems include the Vought T-22, the Martin Marietta T-16, a variety of smart antiarmor submunitions and the "Pave Mover" airborne moving-target-indicator radar system. Many of these systems have been combined into the Pentagon's new JSTARS (Joint Surveillance and Target Attack Radar System) program.

§ **Wide-Area Antiarmor Munitions (WAAM).** An Air Force program comparable to Assault Breaker, it is designed to produce sophisticated air-delivered "standoff" munitions. The WAAM effort embraces several subsidiary development programs, including an advanced antiarmor cluster munition (ACM) using self-forging fragments; a supersmart extended-range antiarmor mine (ERAM) designed to lie in wait for advancing tanks and detonate once they move into range; and the Wasp self-guided mini-missile.

§ **Ballistic Offensive Suppressive System (BOSS).** This is

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one of a number of programs intended to provide non-nuclear clustered munitions for various nuclear delivery systems. Both the Army and Air Force are working on such systems under the new JTACMS (Joint Tactical Missile System) program. Possible delivery systems include the Pershing 2 SSM and the Tomahawk cruise missile. A similar NATO project, known as Axe, may utilize the Trident submarine-launched ballistic missile.

It doesn't take much technological expertise to recognize that these weapons will radically alter the nature of future warfare. Their introduction will produce a battlefield with no rear, one on which anything that moves or gives off heat or sound can be targeted by powerful weapons with a kill probability near 100 percent. Clearly, soldiers' chances of survival on such a battlefield are not good. "Because of technical advances in weaponry," the Defense Department noted in a circular sent to hospitals being asked to participate in the Civilian-Military Contingency Hospital System, "future large-scale war overseas will probably . . . produce casualties at a higher rate than any other war in history." Nor will such casualties be restricted to military personnel: given the high population concentrations in Europe and other potential combat zones, the use of wide-area cluster munitions will probably produce vast civilian casualties.

Because modern conventional weapons can be substituted for tactical nuclear weapons in some hypothetical combat scenarios, we will be exhorted by many politicians—and some arms control experts—to support large purchases of these arms as a way of raising the nuclear threshold. Thus the Democratic Party, in its response to President Reagan's 1983 State of the Union Message, called for the development of more sophisticated conventional weapons as a way of reducing our reliance on nuclear weapons. But while any genuine effort to diminish the risk of nuclear catastrophe deserves support, we must not assume that the deployment of new conventional weapons will automatically produce that result. Indeed, it is entirely possible that the introduction of near-nuclear weapons will make escalation to nuclear war *more* likely. This is true for three important reasons:

First, we can assume that faced with the threat of devastating conventional attacks on their rear-area forces, the Russians will acquire similar weapons—thereby threatening much of Western Europe with attacks of equal intensity. "If the ideas of 'Strike Deep' will work for us, why won't they work just as well for them?" military historian Col. Trevor N. Dupuy asked recently. "I think it utterly ludicrous that we can deceive ourselves into thinking that we are so much smarter than they are that only we can 'Strike Deep,' and keep the war on *their* turf."

Second, given the proliferation of near-nuclear weapons on both sides, any future conventional encounter in Europe is likely to produce such high levels of death and destruction over such a wide area that one side or the other may feel impelled to retaliate with tactical nuclear weapons. As suggested by Julian Perry Robinson of the University of Sussex

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at a recent Pugwash Symposium, "May it not be the case that, as more and more of the militarily valued effects available from nuclear weapons come to be provided by a variety of nonnuclear means, a nonnuclear battlefield may come closer and closer to resembling a nuclear one, even to the point where it would seem to make no great practical difference to initiate nuclear war?"

Finally, there will be no way for Soviet radar to ascertain that an incoming Lance, Pershing or Tomahawk is armed with conventional instead of nuclear munitions, and so, in the heat of battle, enemy commanders may order tactical nuclear counterstrikes. "The firing of a cruise missile armed with a conventional warhead may send an ambiguous signal to the Soviets," Bradley Graham noted in *The Washington Post*. "Though intended to postpone a nuclear engagement, the missile could be mistaken by the Soviets for one carrying a nuclear warhead, which could result in the nuclear escalation that NATO had intended to avoid." Pentagon officials insist that there are technical solutions to this problem—the conventional missiles could be modified, for instance, to give off a distinctive radar signature—but there could never be a guarantee that the Russians would unfailingly make the distinction.

In sum, there is no reason to assume that the introduction of sophisticated conventional weapons will automatically diminish the risk of nuclear war. While disarmament advocates should certainly encourage NATO to reduce its dependence on nuclear weapons, they should not, in their desire to prevent a nuclear war, give uncritical support to conventional weapons programs that may make such a war more likely.

And even if it does not trigger a nuclear war, the introduction of these weapons raises important humanitarian issues. Many experts believe that their use may violate the Geneva Conventions and other international agreements banning the use of especially cruel and indiscriminate weapons. Antipersonnel cluster bombs, for instance, spew thousands of small metal fragments at high velocity in all directions, tearing human bodies apart. Some of the other new weapons have equally devastating effects. And while they are supposedly intended for attacks on military forces, there is nothing to prevent their use against population centers.

Furthermore, there is the problem of proliferation. While there are many proscriptions against the transfer of nuclear weapons to other countries, there are no comparable constraints against the transfer of conventional weapons. It is likely, therefore, that near-nuclear weapons of the type described will eventually be sold to countries in the Middle East, Africa and other volatile Third World areas. As a result, future wars there could produce high levels of destruction, far surpassing the devastation wreaked on Beirut last summer.

Finally, there is the issue of cost. Procurement of all these weapons will add many billions of dollars to the already swollen military budget. Indeed, it is the Pentagon's appetite for these high-technology conventional weapons, more than anything else, that accounts for the massive increases in

defense spending proposed by President Reagan. And because the all-volunteer armed forces are not attracting enough technicians to operate and maintain the new high-tech weaponry, the Pentagon may lobby to reinstate the draft to obtain people with the necessary skills.

It follows that Americans should not permit the new conventional weapons to enter production without first subjecting them to much greater public scrutiny than they have heretofore received. Modern conventional weapons may not threaten the survival of planet Earth, but they do threaten the survival of a great number of human beings and may, in the end, provide the spark for a nuclear cataclysm. □

■ MILITARIZING SPACE

The Star Wars Scenario

THOMAS H. KARAS

The phrase "space for peaceful purposes"—I never understood why in the hell it was put in the [National Aeronautics and Space] Act in the first place. If I could fight a war, I'd prefer to fight it in space, rather than on the ground or in the seas. Now what's so great about keeping space inviolate from warfare? I can't see it . . . if we could get wars out in space, we'd be a hell of a lot better here on earth.

—Gen. Bernard Schriever, U.S.A.F., retired

If any man deserves the title Father of the American ICBM, it is Gen. Bernard Schriever, who headed the Air Force's rush program at the end of the 1950s to close the "missile gap" with the Russians. But Schriever, as first head of the Air Force Systems Command, was also a pioneer in the military uses of satellites. For years he was frustrated by the slowness of the U.S. military march into space. No more. " 'Space for peaceful purposes,' " he said recently, "was a lot of pap for the public, that's all. That's all it was. You don't hear it anymore. You certainly don't hear it from this Administration."

In the past three years, the Pentagon's budget for space programs has risen a good 20 percent annually after inflation. For fiscal 1983, it is \$8.5 billion, about \$2 billion more than the civilian space agency's budget. And that doesn't include a probable \$2 billion to \$4 billion in hidden expenditures for supersecret reconnaissance satellites. Nor does it count NASA's expenditures on the space shuttle, even though military payloads will take up more than a third of the shuttle launches.

What's the money going for? The headline grabber is the laser weapon, but in fact lasers for space are a relatively low

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priority, receiving about \$150 million a year. It's still not clear when, if ever, we'll see a major commitment to laser battle stations in space. As for the space shuttle, the Air Force has still not quite figured out what to use it for, other than delivering already-planned satellites into orbit. Of much more immediate concern to military men is C³I—command, control, communications and intelligence. The primary military use of space is, and for many years will continue to be, the gathering and transmission of information. New electronic gear on satellites will extend the eyes, ears and voices of military commanders as never before.

The emphasis is on making satellites into real war-fighting instruments, whether the war be conventional or nuclear. Building satellites for warfighting means insuring that the information they provide is more precise and detailed, more immediate—or “real time,” as military jargon has it—and more readily available to all levels of command. It also means making the space systems more “survivable.”

On the information-gathering side, new generations of surveillance and reconnaissance satellites are already on the way. For example, our big KH-11 spy satellite already sends back real-time digital electronic images of Soviet territory, but those images lack the fine detail of the “close look” satellite cameras that send back recoverable film capsules. A successor to the KH-11, scheduled to be launched in 1984, will use the latest CCD (charge coupled device) electro-optical technology to produce instant electronic pictures of a quality previously obtainable only on film.

The Navy is designing nuclear-powered radar satellites for continuous, all-weather monitoring of the Soviet fleet. (The Russians have been orbiting such a satellite for several years now.) But even larger radar antennas for space are being developed by Grumman and other companies. They could someday locate planes in the air and tanks on the ground, as well. This year plans call for the space shuttle to place in orbit a satellite carrying the Teal Ruby experiment. Teal Ruby will test new electronic infrared light sensors for tracking planes. The Defense Advanced Research Projects Agency expects that although Teal Ruby is experimental, it will supply some real-time information to the armed forces.

The military term for technology that enhances the capabilities of existing weapons and troops is “force multiplier.” Among the most impressive of the new C³I force multipliers is the Global Positioning System (GPS), also known as Navstar. About a half dozen of the new GPS satellites are now operational, and by 1987 the system will consist of a constellation of eighteen. When all eighteen are operational, any soldier, pilot or sailor with a GPS receiver will be able to pinpoint his exact location (including altitude in the case of fliers) to within fifty feet or less. This kind of precision will open up a host of opportunities to the military: pilots will be able to drop their bombs more accurately than ever before; planes will be able to rendezvous and refuel in complete radio silence; helicopters will be able to land on a dime even in the dark; infantry officers will be able to call in accurate artillery strikes without the need for close-in observers.

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nuclear explosion sensors. The latter will be part of a network called IONDS, for Integrated Operational Nuclear Detection System. This system could be used to detect violations of the 1963 treaty banning atmospheric nuclear tests, but the Air Force regards it as a warfighting tool. With its ability to precisely locate nuclear explosions, IONDS could tell the military which targets the Russians had hit in a nuclear first strike. But it could also tell them where in enemy territory American warheads had or hadn't gone off, so that restrikes could be pinpointed on targets that were missed the first time.

The purpose of much of the new military space technology is to adapt satellites for fighting a nuclear war. New early warning satellites will have CCD focal planes in their telescopes, enabling them to plot precisely the trajectory and target of every Soviet missile that is fired.

The new Milstar satellite communications system, which is scheduled to be launched at the end of the 1980s, is a "warfighting system," according to the head of the Air Force Electronic Systems Division. It is designed to maintain communications among airborne command posts, bombers, missile control centers and missile-launching submarines after a nuclear war has broken out. Milstar will also be used by the Army's new mobile command posts, now under construction [see William Arkin and Peter Pringle, page 434]. The Pentagon is also studying the use of lasers in space-earth communications.

Satellite systems today are heavily dependent on ground stations, which control the spacecraft and receive and analyze the data they transmit. Since most of these stations would be destroyed in a nuclear war, the Air Force Space Division is working to make military satellites autonomous. The Milstar communications satellites will be able to send messages to one another, reducing the need for large ground terminals. Having the satellites carry more "on-board signal processing"—computing power—will open the way to the use of simpler, smaller and more mobile readout stations on the ground. A new space sextant will enable satellites to navigate by the stars automatically instead of being controlled from the ground.

As warfighting tools, satellites are being made more survivable. The new DSCS III (Defense Satellite Communications System) satellite is "hardened" against nuclear radiation and possibly against enemy lasers. Some future satellites will be maneuverable so that they can evade Soviet antisatellite weapons. Others may make use of "stealth" technology and remain invisible to Soviet optical or radar trackers until they are needed.

The Russians already have a "killer satellite" that can match orbits with a target and explode nearby. This kind of weapon has drawbacks, however. It is somewhat unreliable (in tests it functioned only about half the time), and it lacks the range needed to hit U.S. early warning and communications satellites, which orbit at an altitude of 22,250 miles. The United States abandoned its nuclear-armed antisatellite weapon, ASAT, in 1975 and is about to test a new antisatellite missile that is launched from an F-15 jet.

In preparation for the new era of space war, the Air Force

created a special Space Command last September. But even before then, it was busy improving its Space Defense Operations Center in Colorado Springs and installing new radar and optical tracking systems for monitoring space.

In a war between the Soviet Union and the United States each would be likely to attack the satellites of the other while defending its own satellites. War in space will be an extension of war on earth; it will be part of the larger clash of military forces, each trying to neutralize the other. Carrying the battle out there won't make us any safer down here. □

■ THE FUTURE

Previewing the Latest High Tech

STAN NORRIS

Nearly a quarter-century after President Dwight D. Eisenhower warned in his farewell address of the "danger that public policy could itself become the captive of the scientific-technological elite," U.S. strategy is in thrall to the weapons makers. And America is not alone in its technological bondage. Philosopher Cornelius Castoriadis, in his book *Devant la Guerre*, argues that Soviet military and technical experts have supplanted the Communist Party as the true center of power in the Soviet Union. In a speech not long before his death, President Leonid Brezhnev said, "Competition in military technology has sharply intensified, often acquiring a fundamentally new character. A lag in this competition is inadmissible."

What American and Soviet leaders have long known but rarely admitted is that technology now shapes strategic policy rather than being shaped by it. Weapons are invented and then missions are found for them; threats are proclaimed that justify those missions, and finally military doctrine swings into place, integrating the new weapons into the master strategic blueprint. Thus, in the days of less accurate nuclear missiles, the cornerstone of U.S. nuclear doctrine was mutual assured destruction. Once weapons capable of taking out hardened missile sites were devised, however, the doctrine of counterforce, expressed in the Carter Administration's Presidential Directive 59, emerged.

Now more and stronger technological fixes are coming—"stealth" bombers and missiles, directed-energy weapons, new kinds of nuclear weapons, artificial intelligence and robotics are approaching the production stage. These new devices will profoundly alter nuclear warfighting doctrines just as MIRV did in the 1970s.

§**Stealth.** The stealth bomber would be invisible to various detection systems. Stealth first came to light during the 1980 campaign through deliberate leaks by the Carter

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Administration to counter charges that it was "soft" on defense. Stealth incorporates several technologies: the use of nonmetallic materials and special paints to absorb signals and hide "hot spots" that are picked up by radar; special aeronautic designs (perhaps on the principle of the flying wing) that decrease radar visibility; and electronic countermeasures that fool detection systems into indicating the aircraft is somewhere other than where it is.

Although stealth technology is generally discussed in regard to strategic bombers, the Defense Department would like to apply it to a variety of other weapons, including cruise missiles. The Air Force installed only a few of the thousands of air-launched cruise missiles it has ordered, then asked for stealth cruises—a classic example either of technological advances outrunning deployment or, as *The Washington Post* charged, of budgetary gamesmanship. As for the "threat" justifying the stealth cruises, the Air Force points to the Soviet Union's new interceptor aircraft and hypersonic SA-10 missiles.

The competition among aerospace companies for the various potentially lucrative stealth contracts is fierce. General Dynamics, Boeing and Lockheed are vying for the cruise missiles, while Northrop, Rockwell and Lockheed are tangling for the bomber contracts. In a bid to outflank Northrop, Rockwell joined forces with Lockheed to try to win what is likely to be a \$25 billion order for stealth aircraft. The two companies have already begun designing a stealth version of the B-1B, called the B-1C, thus obviating the need for the Northrop stealth bomber. As a counter-punch, Northrop offered to deliver its bomber in 1988—three years earlier than scheduled—thus eliminating the need for Rockwell's B-1B.

The potential applications of this technology are vast. In the not too distant future there could be stealth fighter and reconnaissance planes, helicopters, small ships and even tanks.

§ **Directed-energy weapons.** With clockwork regularity, aerospace trade journals like *Aviation Week and Space Technology* turn out scare stories about impending Soviet advances in laser beam and related technology. Their claims of laser "gaps" are sensationalized in the mass media and create public anxiety. Though of some use in alerting the American people to these new weapons, which they will ultimately have to pay for, these horror tales do little to inform the debate over the wisdom—or even the feasibility—of running this new lap in the arms race.

There are two kinds of directed-energy weapons: lasers and the less-well-known particle beams. Laser devices produce a concentrated ray of light, while particle beams are composed of charged atomic or subatomic particles such as electrons or ions and travel near the speed of light. The most frequently suggested application for both technologies is in space-based antiballistic missiles, but other possibilities are being considered. Reagan dreams of building a grand network of lasers or particle beams on satellites approximately 600 miles out in space, which could destroy Soviet missiles within six or seven minutes after they are launched.

For this to work, pulses of light or particles must be ex-

pertly aimed and fired at a missile traveling about three miles a second. If they miss or hit a decoy, the weapons must be re-aimed and refired. Obtaining adequate warning and coordinating so elaborate a system against several thousand Soviet land- and submarine-based missiles would be a formidable task. Hundreds of satellites would be needed to cover all launching sites and to comb the ocean for missile-bearing ships and submarines. These weapons require vast amounts of energy since their beams would be diffracted by the atmosphere and bent by the earth's magnetic field. Lasers a thousand times more powerful than those we now have would need to be developed.

Obviously, the first step in any Soviet plan to launch a missile attack would be to destroy or disable U.S. directed-energy weapons. This could be done in many ways with relative ease. The cheapest methods would use antisatellite weapons to jam communications links to U.S. ground control centers or nuclear weapons detonated in space to produce a disabling electromagnetic pulse (E.M.P.) that would burn out communications systems.

§ **Nuclear weapons.** If some recent news stories can be believed, scientists at the Lawrence Livermore National Laboratory are on the verge of breakthroughs in nuclear weapons technology. These "third generation" nuclear devices would accentuate any one of the forms of energy released in a nuclear explosion: blast, heat, radiation, E.M.P. The neutron bomb, which has enhanced radiation and reduced blast, is a crude prototype of these weapons. The possibilities are many. For example, a bomb with radically increased E.M.P. would, in principle, be markedly effective against Soviet communications and electronic systems. Physicist Edward Teller envisions special satellite-launched antiballistic missiles, which, when exploded,



would emit amplified X-ray laser beams to destroy incoming Soviet missiles.

Some of Teller's enthusiasm is shared by the Senate Armed Services Committee. In a recent report, the committee announced it was "especially intrigued with emerging new concepts" and called for a "deliberate, multiyear program" to develop such weapons. In language that has become all too familiar, the senators say the new devices would be for "purely defensive purposes," ignoring the fact that their introduction would make nuclear war more likely. As they say, "These concepts could result in weapons which can only be used to destroy the offensive systems of a potential adversary, and may well render offensive nuclear systems ineffective, thus removing the threat of nuclear war." But the line between "defensive" weapons whose purpose is to destroy the enemy's offensive weapons and offensive counterforce weapons that also destroy enemy missiles is so fine as to be almost invisible.

§ **Artificial intelligence and robotics.** This will be a burgeoning area of research in the 1980s for the intelligence agencies and the Pentagon. Artificial intelligence means "smart" computers—machines which learn, "reason" and make decisions. One C.I.A.-sponsored research project is developing a computer system that can process information and formulate hypotheses based on it. Artificial intelligence is also being designed to automatically translate the huge volume of foreign language intercepts the National Security Agency collects from all over the world.

The military applications of this technology are limitless. Nearing completion is a computerized system that will locate targets and guide missiles to them. Used against tanks, such missiles would scan the battlefield, locate the targets and attack on their own. Antiship missiles would "know" the shapes of Soviet ships and select which ones to strike.

A recent study published by the Army War College specifies dozens of uses for smart robots on twenty-first-century battlefields. Because of high manpower costs and declining birthrates, the report says, robots will be needed, particularly on certain high-risk missions. Robotic "point men" could detect booby traps or ambushes and warn human soldiers following behind. Robotic tanks could roam the battlefield locating or planting mines. According to the study, "They [robotic systems] could operate uninhibited in nuclear, biological or chemical environments." Finally, "One . . . area in which robotic-artificial intelligence could have potential application lies in the strategic warning, trans-nuclear and post-nuclear strike periods. During these periods, when humans will be under considerable emotional stress, assistance from a robotic device which had been pre-programmed, for example, to keep track of the constitutional successors might be invaluable."

As these examples show, new technology continues to create new forms of terror. The technological arms race spirals on, adding to the danger of war by miscalculation, and diminishing rather than increasing national security. Weapons have outrun politics. The search for a degree of common security lies not in the laboratory but at the negotiating table. □

■ AFTERWORD

Ritual Dance of The Superpowers

RICHARD J. BARNET

The decade of the 1970s, which Richard Nixon hailed as the beginning of a "generation of peace," witnessed an extraordinary acceleration of the technological arms race, and détente had no discernible effect in curbing it. The military innovations described elsewhere in this issue were conceived, contracts let and production commenced in years when the political relations between the superpowers had greatly improved. Thus, the conventional wisdom of political science—that arms competition is an expression of political hostility and unresolved disputes, and that it can be ended only by first improving political relations—has proved to be at best a half-truth.

Why was there such an escalation of the technological arms race in the 1970s? The "scientific-technological elite," which President Eisenhower paired with the "military-industrial complex" in his 1961 farewell address, is not a sufficient explanation. It has been alive and well since World War II. Thousands of bright, creative and innovative scientists and engineers are paid well to think up imaginative ways to kill people. Not only must the weapons be designed to kill cheaply—the "productivity" of nuclear weapons makes this easy—but they must be packaged in such a way as to fascinate political leaders who must persuade voters that soaring defense budgets are necessary. The secrets of selling aging politicians gadgets to kill young men in new ways have been known for years, and the techniques have been brought up to date to kindle enthusiasm for weapons of mass destruction.

The escalation of cold war rhetoric over the last few years is more a consequence of the weapons buildup than a cause; it is impossible to generate public support for multibillion-dollar weapons systems without "scaring hell out of the country," as Senator Arthur Vandenberg advised President Truman when the first large military appropriations of the cold war were being planned. The "Soviet threat" is an indispensable component of the weapons acquisition process.

The threat is not fictitious, of course. The Soviet Union in recent years has devised enough new weapons to give political plausibility to a huge U.S. investment in the search for technological "breakthroughs." However, the Pentagon consistently exaggerates the threat of Soviet advances. Thus attempts to curb the arms race with arms agreements like SALT II that only limit the choices of technology are bound to fail because the propaganda designed to keep popular

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anxiety at a high pitch and justify a continuation of the arms race prevents the agreements from working.

The real reason for the continuance of the technological arms race is that it has become a crucial source of legitimacy for the national security state. The inescapable prospect of permanent weapons innovation provides it the perfect rationale. The military state was born with the cold war, and it has given rise to a priesthood that proclaims that solutions to national security problems are technological rather than political. Technology never stands still, they argue, and so the military establishment must keep growing and must exercise ever greater control over foreign policy. Issues of war and peace are not suitable for democratic debate, say the arms technocrats, because the facts must remain secret. The technology race creates a constant flow of classified information from which the scientific priesthood derives its power.

Paradoxically, the national security state has received a huge boost as the political limitations of military power have become more evident. In the 1970s the United States was defeated in Vietnam; scored an embarrassing Pyrrhic victory in the rescue of the Mayaguez; looked helplessly on as the major recipient of its military largesse, the Shah of Iran, fled the angry mob; and, as the new decade began, mounted a disastrous military operation against the captors of American hostages in Iran. With the possible exception of its contribution to the war in Angola, the Soviet Union did not achieve much with its growing military power either. The Russians were thrown out of Egypt, leaving behind some \$5 billion in military equipment, and after three years they remain bogged down in Afghanistan in a war they cannot win and dare not end.

The arms race, which used to be seen as preparation, has increasingly come to be a substitute for war. It has become a ritual dance of the superpowers, which dare not fight each other. But as they continue their game of chicken, the danger of war by miscalculation increases. Neither side has a remotely plausible strategy for winning a nuclear war or keeping a conventional war from escalating. The United States has scored short-term "successes" with covert paramilitary operations such as those in Iran in 1953 and Guatemala in 1954. But this nation has not won a clear-cut military victory on the battlefield since V-J Day. (The temporary victory MacArthur achieved in Korea was lost once the United States escalated its war aims, charged up to the Yalu River and was hurled back by the Chinese.) Because of its cost and destructiveness, war has become more and more unfightable. Big powers with complex global interests find it hard to damage other nations without damaging themselves. As war itself becomes too dangerous for nuclear powers to attempt, the psychological and economic dimensions of the arms race assume ever greater importance.

U.S. military expenditures now represent the world's most expensive educational budget—and the "pupils" are six or seven leaders in the Kremlin. Nuclear stockpiles are so huge that new weapons are purchased not to accumulate more explosive power but to create a certain mind-set. The message is clear: "We can outclass you in technological

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development and in the waste of resources. So submit to our terms." Such threats are unlikely to work, given the Soviet Union's historical willingness to sacrifice the civilian economy to the military. In any event, the Kremlin would have a hard time surrendering even if it felt inclined to do so, since the Reagan Administration has no coherent definition of what victory would mean. The official justification for the new stage of the arms race is so implausible that one must conclude that it is merely an effort to lend an air of rationality to a hopelessly irrational process.

Such an effort is not new. In the late 1940s, when the United States had a monopoly on nuclear weapons, controlled the world's money supply and was the only undamaged industrial power on earth, and the Soviet Union lay in ruins, Secretary of State Dean Acheson urged rearmament in order to build "situations of strength." Because the superpowers cannot contemplate actually fighting each other, the development of implausible defenses against improbable attacks becomes their principal business.

The irrational accumulation of military hardware is a pathological response to two interrelated crises of the modern state. War is no longer an effective instrument of national policy for big powers. The superpowers have entered a post-Clausewitzian world where war is no longer an extension of politics. The classic bond between politics and war has not been completely broken, but it is so badly frayed that no one has a tenable theory of how one nuclear-armed nation can impose its will on another in battle or in disarmament negotiations. The Reagan Administration sees arms-reduction talks as another battlefield where, it hopes, the military superiority of the United States will somehow miraculously be ratified. That is the idea behind the "bargaining chip" theory of negotiation, which holds that the Russians will agree at the bargaining table to what they have steadfastly refused to accept in the arms buildup itself: American control of the pace and development of the competition in the weapons race. Disarmament negotiations provide a rationale for a buildup that cannot be justified on any other grounds.

The second crisis has its roots in the economic distress of the last decade. This is especially true in the United States. The last Keynesian in the White House, Richard Nixon, reduced the military's share of the gross national product and increased welfare benefits and transfer payments. But by the mid-1970s there was a mounting attack on the welfare state. In the wake of inflation and anxieties about oil and other natural resources during the first half of the decade, a wave of antigovernment sentiment swept across many capitalist countries, but it was particularly strong in the United States. The right wing came to power in this country on three interrelated ideological themes: government was encouraging "permissive" social conduct (condoning abortion, coddling murderers, etc.); it was turning over the hard-earned dollars of the middle class to shiftless, "unproductive" welfare cheats, immigrants and minorities; and it was neglecting national defense. Even before Reagan was elected, his rhetoric and his political appeal cast their shadow

upon the Carter Administration, and the President who had spoken of a world of "zero nuclear weapons" at his inauguration was forced to step up arms spending across the board.

The military budget has for many years been the only acceptable planning mechanism in our supposedly laissez-faire economy. President Carter created more than 200,000 defense-related jobs. The Pentagon can infuse hundreds of billions of dollars into the economy in the course of five-year or ten-year plans, and even target the expenditures to industrial sectors or geographical regions—a role no other branch of the government can play. Military expenditures are used to legitimize the strong national state at a time when it has lost many of its traditional functions. The military pork barrel is almost always less vulnerable to political controversy than any other program. Unlike welfare and social programs, which have redistributive effects, military expenditures by and large reaffirm the status quo. Because of the Reagan cutbacks in all other areas of government spending, the role of the military budget as an economic stimulus has become much more important. The biggest contractors and the regions with the greatest number of military-industrial installations benefit the most.

The Soviet Union, too, suffered conspicuous failures in the 1970s. The hopes of Soviet citizens for greater economic progress and the inefficiency, unrest and repression associated with the Soviet system have been widely publicized. The Soviet Union is no longer regarded as a model by the Third World, and while it is nowhere near collapsing, as President Reagan cheerfully predicts, it is not doing particularly well, thanks in large part to the enormous drain of its military budget. But like American politicians, Soviet leaders reach for the cure that is killing their society. They, too, play the "bargaining chip" strategy, and while the Russians take nuclear war, and hence arms control, more seriously than Americans do, powerful forces in the Soviet Union also have a huge investment in the continuation of a "managed" arms race. The more the two superpowers fail to build societies worthy of their skills, their wealth and their dreams, the more addicted to the arms race they become.

The present burst of lethal innovation surpasses that of earlier rounds of the arms race. The competition is intensifying on many fronts simultaneously: nuclear, near-nuclear and conventional weapons; space warfare; command and control systems, etc. Also, the long-held wish of many military planners to blur the distinction between nuclear and nonnuclear weapons is now being granted. Ironically, this dangerous development is a response to the peace movement. A new generation of national security planners, playing to growing antinuclear sentiments, seeks to forge a national consensus by shifting reliance somewhat from nuclear weaponry to the near-nuclear technology Michael T. Klare describes. If the new strategy could succeed in eliminating all battlefield nuclear weapons, it would be worth a serious debate. But as was the case with all previous attempts to "raise the nuclear threshold," the new weapons are not substitutes for nuclear arms. They are intended as sup-

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Military Spending: Facts and Figures, Worldwide Implications, and Future Outlook. Wassily Leontief and Faye Duchin. (1983, \$19.95). Using input-output methodology, which Nobel laureate Leontief developed, the authors examine accelerated military spending and assess alternatives for individual regional economies and the world economy. At your bookstore or **Oxford University Press**, 200 Madison Ave., New York, NY 10016.

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Providing for the Common Defense: A Military Policy Reader. Military decision making and current forces strength, Pub. = 531. **The Quest for Arms Control: Why and How.** The evolution of arms control and evaluation criteria. Pub. = 530. Each 8 pp., \$1.25. Add 50¢ handling per order. **League of Women Voters**, 1730 M St. NW, Washington DC 20036.

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London After the Bomb: What a Nuclear Attack Really Means (1983, Paper, \$4.95). Five research scientists discuss the effects of radiation, problems of law and order, shortages of food and water, destruction of power supplies, transport and communications, and long-term effects of a nuclear attack. At your bookstore or **Oxford University Press**, 200 Madison Ave., New York, NY 10016.

Looking for the Links: Nuclear Weapons & Third World Intervention. A conference sponsored by the **Friends Peace Committee**, Saturday, May 7th, 9am-5pm. Registration \$11 (with lunch) or \$7 (without) in advance, \$10 at the door. Keynote speaker Randall Forsberg (National Nuclear Weapons Freeze Campaign). Panel, workshops. FPC, 1515 Cherry St., Philadelphia PA 19102. (215) 241-7230.

Gods of Metal. Maryknoll's moving documentary film presents a powerful case against the nuclear arms race and the role of people of faith in stopping it. Shows its economic and social impact on the U.S., and especially the poor. 1983 Academy Award nominee. 27 min./16 mm. color or ¾" video. Purchase \$325, rental \$25. Write or phone **Maryknoll World**, Maryknoll, NY 10545. (914) 941-7590, ext. 354.

The Central American War. 12 pp; **Makers of Cruise/Pershing II.** 8 pp; \$1, \$25/100. **Military Industrial Atlas of U.S.** 7-map set, \$2.50. Military contractors; campus research; storage/deployment; accidents. **The Time Has Come**, Film—International disarmament movement. 28 min./16 mm. color/sound. Purchase \$250, ¾" video \$175; rental \$55. **NAR-MIC/American Friends Service Committee**. 1501 Cherry St., Philadelphia PA 19102 (215) 241-7175.

plements to the nuclear stockpiles, which will be situated near potential battlefields. Thus the high-technology "conventional" weapons are more likely to trigger nuclear war than to discourage it.

The new stage of weapons development has several important effects on the political environment. It greatly complicates the traditional task of the arms controllers. The small size of the easily transportable cruise missile will make the verification task much more difficult, if not impossible, once large numbers of these weapons are produced and deployed. The military race in space could undo the accomplishments of a SALT or a START agreement even as the ink was drying. Also, the uses to which new weapons are to be put are multiplying. Many of them are designed to make success in distant military interventions more possible. This will not only give the United States greater political weight in strategic Third World areas but, Reagan planners hope, will build a domestic consensus in support of counter-insurgency warfare.

The motive for producing much of the new weaponry is economic. U.S. military planners are looking for a basing mode for the MX that will create costly problems for Soviet planners, since they know that the Russians will spare no expense to counter a potential U.S. first-strike capability. The conventional arms race between the United States and the Soviet Union undergirds the elaborate program of arms sales on which the United States heavily depends to offset its balance-of-payments deficit. In their own military rivalry the superpowers set ever higher standards for their weapons

customers to emulate and, in the process, create a permanent market for their used missiles, cruisers and fighter planes.

There are inherent contradictions to the economic arms race. The assumption that high levels of military spending will squeeze the Soviet Union while doing no harm to the American economy is no longer credible. The arms race is also becoming an increasing source of irritation within the Western alliance. The United States is pressing the Japanese to spend more on arms to force them to give up their "unfair" economic advantage—to militarize their economy so that their productivity and innovation in civilian markets will fall to our levels. But the Japanese are unlikely to accommodate us. They will in all probability do no more than increase their military spending moderately, as part of a more independent and assertive foreign policy. But in the process they are quite likely to emerge as a formidable competitor to America in the high-technology segment of the world arms market.

The weapons revolution makes it unmistakably clear that the antinuclear movement must become an antiwar movement. The alternative of a conventional arms buildup in the name of nuclear pacifism must be resisted. An antiwar movement dedicated to the eradication of the roots of war can make a historic difference in our economy and political culture, but a movement that merely tries to stop one weapons system at a time will never keep up with the inventive minds and astronomical budgets of the arms makers and the arms packagers.

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The artificial separation of disarmament negotiations, which has kept them compartmentalized and technocratic, must be ended. Nuclear missiles, whether they are in Europe, America or the Soviet Union, are part of the same military environment and they should be dealt with at the same time. Similarly, nuclear and nonnuclear forces in Europe constitute a seamless threat. How to orchestrate negotiations comprehensive enough to deal with that threat is a technical problem that can be solved by professional diplomats. The task of a serious antiwar movement is to demand that the superpowers stop treating arms negotiations as another way to carry on the arms race.

The multilateral character of the arms race requires multilateral negotiations, but much can be done to create a favorable climate for negotiations by unilateral acts of restraint. The arms race continues because each side takes unilateral actions that pose a threat to the other. The U.S. peace movement should not be afraid to demand that our government take unilateral actions that will reverse the arms buildup. But a serious antiwar movement must by definition be international and independent of all governments, and it must exert pressure on the Soviet Union as well as on the United States. It should not be afraid to support genuine Soviet initiatives for peace, nor to criticize cynical disarmament propaganda. It must keep sufficiently informed so as to distinguish between the two. The more the movement in the United States and Western Europe shows itself to be fair, innovative and politically effective, the more influence it is likely to have in Moscow. The Russians cannot afford

to ignore an international movement's insistent demands that it make reasonable concessions for peace. At the moment, however, the Kremlin is under little pressure from the peace movement because its position on the arms talks is more flexible than the intransigent line taken by Washington.

What is of critical importance in disarmament is not the number of weapons destroyed—at least not until a nation reaches almost 100 percent. Arms control or arms reduction become significant when they help create the preconditions for domestic policy change in nations now enmeshed in permanent war preparation. Nothing less than a national program for the conversion of military industry and military laboratories to peacetime uses holds any hope for putting an end to the weapons spiral. The nuclear freeze, the abandonment of warfighting strategies, "no first use" declarations and limited nuclear-free zones are all positive moves. But they should be seen not as ends in themselves, only as steps in a process for transcending war itself.

The greatest inhibitor to thinking in these terms is "realism," and under this banner we march steadily toward annihilation. The "technological imperative," the idea that we are powerless to prevent the development of weapons and strategies of mass murder, is a myth not unlike that of the divine right of kings. It is believed because powerful people have an interest in proclaiming that it is true. The arms race can indeed be reversed, but not without attacking the myth directly and changing the way we make life-and-death decisions. □

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value to the student and policymaker is great." *Journal of Contemporary Studies*. "All aspects of cruise missiles as a multipurpose 'family of weapons' ... are impressively addressed in this expert study." *Foreign Affairs*. "For anyone who wants one complete information source on cruise missiles, the search is over." *Annals*.

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The Armaments Bookshelf

In the last two years, publishers have released an extraordinary number of books on the newest developments in military high technology. Dubbed "Fear Books" by a recent *Publishers Weekly*, they cover a chilling array of once-futuristic inventions in weaponry, from little-known chemical agents to the most advanced nuclear arms. The entries on the following list have been selected for their special relevance to the articles in this issue by the editors and the contributors. The selections were compiled by Michael T. Klare, Richard Kaye, David Corn and David Leech.

THE WIZARDS OF ARMAGEDDON: Strategists of the Nuclear Age. *By Fred Kaplan. Simon and Schuster. \$18.95. Forthcoming in May.* Kaplan traces the path of the military analysts who became responsible for imposing order on the highest form of chaos yet invented. In so doing he chronicles America's evolving strategic doctrine—from the first theory of deterrence to today's delusions about limited nuclear war. He reveals how strategic decisions have been made in Washington and how the ideas of so few—"a new elite" based primarily at the Air Force-created RAND Corporation—have come to have such a great impact on the most crucial issue of the past thirty-eight years.

THE SOVIET UNION AND THE ARMS RACE. *By David Holloway. Yale University Press. \$14.95.* In his quest to determine what drives Soviet military power, Holloway, an authority on Soviet defense policy, undertook a study of the role of the military in the birth of the state; Russian views on the use of military force in the nuclear age; and the economic and political institutions that sustain the Soviet defense establishment. The Soviet Union's primary military goal, he finds, is to prevent nuclear war. At the same time, "a strong emphasis on the need to prepare to wage war has been a distinctive feature of Soviet military thinking in the nuclear age." With both East and West caught in the conflict between deterrence and preparedness, the prospects for lessening tensions between them, Holloway maintains, are not bright. But there is some reason for



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A HIGHER FORM OF KILLING: The Secret Story of Chemical and Biological Warfare. By Robert Harris and Jeremy Paxman. Hill and Wang. \$14.95. Paper \$7.95. Published last year, this is perhaps the most comprehensive independent study of one of the least examined areas of Western military technology. Penetrating the near-obsessive secrecy surrounding chemical and biological warfare, Harris and Paxman trace germ warfare from "gas attacks" in World War I to successful experiments with "disease weapons" in World War II, concluding with a look at present-day research on more refined, more deadly biological weapons.

THE THREAT: Inside the Soviet Military Machine. By Andrew Cockburn. Random House. \$16.95. Forthcoming in June. Incorporating interviews with Soviet military personnel as well as American and European officials, Cockburn attempts to refute the Pentagon's claims for the Soviet Union's enormous military prowess. He insists that the Soviet Army and Navy are poorly trained and organized, and that its weapons technology is as limited as the country's domestic hardware. Cockburn argues that it is the exaggerated view of Soviet military superiority that accelerates the arms race.

NATIONAL DEFENSE. By James Fallows. Vintage. Paper \$4.95. Considered by many to be the bible of the military reform caucus in Congress, this is a revealing analysis of the military procurement process. Fallows persuasively demonstrates how Pentagon leaders consistently favor high-tech complexity over military utility.

THE NEW HIGH GROUND: Strategies and Weapons of Space-Age War. By Thomas Karas. Simon and Schuster. \$14.95. Now that President Reagan has called for the militarization of space, NASA has devoted a quarter of its budget to military spending. Karas examines a wide range of technological innovations in the space industry as well as some of the more powerful figures who dictate these operations. He calls for a prompt debate on the implications

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THE ORIGINS OF THE SECOND COLD WAR. *By Fred Halliday. Schocken Books. \$18.50. Paper \$6.25.* This is a penetrating, synoptic analysis of the roots of the revival of cold war tensions in the 1980s. Halliday challenges the notion that there is a basic political symmetry between the United States and the Soviet Union, arguing that the international peace movement must come to terms with the political issues in the East and West, South and North, which have fired the arms race.

WITH ENOUGH SHOVELS: Reagan, Bush & Nuclear War. *By Robert Scheer. Random House. \$14.95.* Scheer deftly exposes the Reagan Administration's nuclear and civil defense strategy, drawing on extensive interviews with some of the key players in the nuclear buildup.

SIPRI YEARBOOK: World Armaments and Disarmament. *By the Stockholm International Peace Research Institute. Taylor and Francis. \$55.* Perhaps the best starting point for basic information on current military and strategic trends, this annual report also excellently details the progress on arms control negotiations.

THE DEFENSE INDUSTRY. *By Jacques S. Gansler. MIT Press. Paper \$9.95.* This is the first detailed post-Vietnam examination of the military-industrial complex, by a former Deputy Assistant Secretary of Defense; an excellent source.

THE PERMANENT WAR ECONOMY. *By Seymour Melman. Touchstone Books. Paper \$5.95.* Melman's classic analysis of how military spending distorts and weakens the American economy, though almost a decade old, remains relevant.

WHAT KINDS OF GUNS ARE THEY BUYING FOR YOUR BUTTER? *By Sheila Tobias, Peter Goudinoff, Stefan Leader and Shelah Leader. William Morrow. \$15.95.* Examining the intricacies of the military bureaucracy as well as the rationale behind its vaulting expenditures, this is a pioneering attempt at translating Pentagonese into terms the lay person can understand.

THE GAME OF DISARMAMENT. *By Alva Myrdal. Pantheon Books. Paper \$7.95.* Myrdal, a former Swedish

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diplomat and a 1982 Nobel Peace Prize winner, has written a passionate critique of the "arms control" policies of the superpowers.

FIRST STRIKE: The Pentagon's Strategy for Nuclear War. *By Robert C. Aldridge. South End Press. Paper \$8. Forthcoming in April.* This is a highly useful demonstration of how U.S. war planners are building a first-strike nuclear weapons capability.

THE SHAPE OF WARS TO COME. *By David Baker. Stein and Day. \$19.95.* Difficult reading, this is nevertheless a richly detailed work on recent advances in military technologies.

OUTER SPACE: A New Dimension of the Arms Race. *Edited by Bhupendra Jasani. Taylor and Francis. \$35.* A valuable collection of essays on the militarization of space.

Other Suggested Readings

Gordon Adams, *The Iron Triangle: The Politics of Defense Contracting* (Council on Economic Priorities, 1981).

William M. Arkin, *Research Guide to Current Military and Strategic Affairs* (Institute for Policy Studies, 1981).

William M. Arkin, Thomas B. Cochran and Milton H. Hoenig, *The Nuclear Weapons Data Book*, vol. 1, *U.S. Forces and Capabilities* (Ballinger, forthcoming, 1983).

Aviation Week & Space Technology, special issues on lasers and particle beam weapons (July 28 and August 4, 1980).

Desmond Ball, "Can Nuclear War be Controlled?" *Adelphi Papers*, no. 169 (International Institute for Strategic Studies, 1981).

Richard J. Barnet, *The Alliance: America, Europe and Japan* (Simon and Schuster, forthcoming, 1983).

Richard J. Barnet, *Real Security: Restoring American Power in a Dangerous Decade* (Simon and Schuster, 1981).

Richard J. Barnet, *The Roots of War* (Penguin, 1973).

Kel y Burke, "Electronic Combat Warfare of the Future," *Armed Forces Journal* (December, 1982).

Carnegie Panel on U.S. Security and the Future of Arms Control, *Challenges for U.S. National Security: Nuclear Strategy Issues of the 1980s*, Third Report (Carnegie Endowment for International Peace, 1982).

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Frank Donner offers a provocative analysis and thorough documentation of the outrageous attempts by right wingers in media, Congress and the Administration to discredit the nuclear freeze movement, charging that it is inspired and manipulated by the Soviet Union.

Myths of the Middle East.

This special issue of *The Nation* is devoted to breaking the logomachy jam in the Israeli-Palestinian conflict by subjecting the emotion-sodden rhetoric that weighs down current thinking to a blast of fresh ideas.

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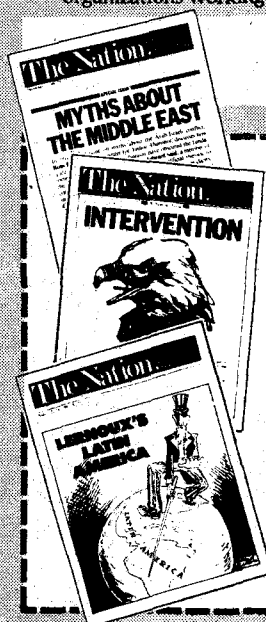
Warning that the peace movement must not be caught "sleepwalking," E.P. Thompson outlines the dangers of the Soviet "peace offensive," and urges the movement to eschew the seductions of both superpowers and to continue to "take the hand away from politicians and play it ourselves; by demonstrations, direct action, changing people's hearts and minds and by . . . breaking the barriers between East and West."

Disarmament: Covering the Unthinkable.

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Richard Halloran, "Pentagon Draws Up Strategy For Fighting a Long Nuclear War," *The New York Times* (May 30, 1982).

International Institute for Strategic Studies, "New Conventional Weapons and East-West Security," Papers from the I.I.S.S. Nineteenth Annual Conference, *Adelphi Papers*, nos. 144 and 145 (1978).

Mary Kaldor, *The Baroque Arsenal* (Hill and Wang, 1982).

Mary Kaldor and Dan Smith, eds. *Disarming Europe* (Merlin Press, 1982).

Michael T. Klare, *Beyond the "Vietnam Syndrome": U.S. Interventionism in the 1980s* (Institute for Policy Studies, 1981).

Christopher Paine, "On the Beach: The Rapid Deployment Force and the Nuclear Arms Race," *MERIP Reports*, no. 111 (January 1983).

Peter Pringle and James Spigelman, *The Nuclear Barons* (Avon, 1982).

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Benjamin F. Schemmer, "Defend Forward, But Strike Deep," *Armed Forces Journal* (November 1982).

Otis Port, Robert Henkel, Michael Johnson, Evert Clark and James Canan, "Killer Electronic Weaponry," *Business Week* (September 20, 1982). □

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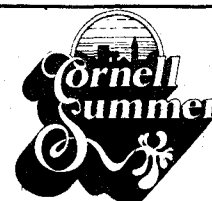
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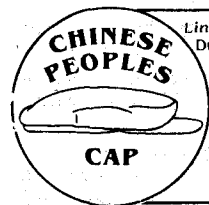
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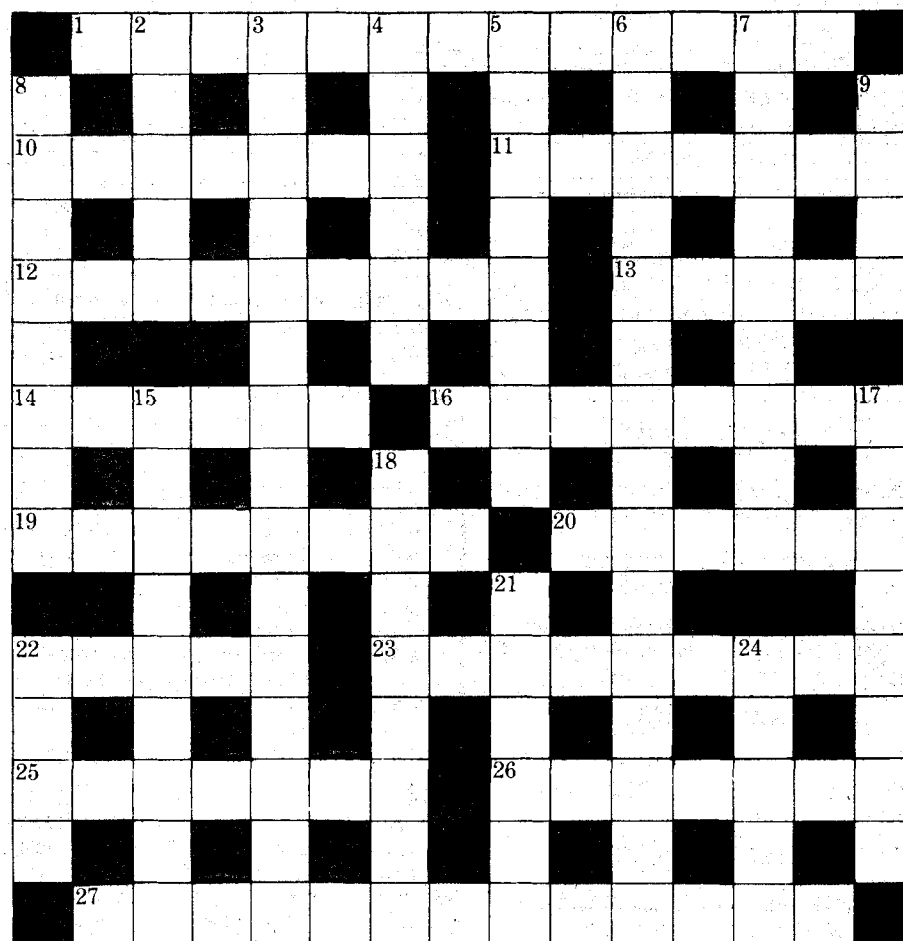
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S	U	M	P	A	D	D	R	E	S	S	E	S	S

Crossword Puzzle No. 1957

FRANK W. LEWIS



ACROSS

- 1, 14 and 9 down Did the poet (using modern spelling) imply his sweetheart was somewhat radical before the Communist type revolted? (He went on to identify one just released from jail in early summer.) (2,4,2,4,1,3,3,4)
- 10 See 20
- 11 On all but the first of the month, the "I" is certainly moving around! (2,3,2)
- 12 Fry here, no doubt, to start the commercial operation. (4,5)
- 13 The Spanish dined here—that's the way to make them happy! (5)
- 14 See 1
- 16 One habitually associated with the pen, as you might say. (8)
- 19 Urges a boy to get something to eat. (3,5)
- 20 and 10 Searchers for Mr. Christian, or other predators? (6,7)
- 22 As far as his father was concerned, George didn't! (A ship might, however.) (3,2)
- 23 Wartime restrictions concerning your accompaniment under it? (5,4)
- 25 Smoking weapons if so? (One might hear it from the 10.) (7)
- 26 The laic might confuse it, but the cleric should be able to straighten out such matters . . . (7)
- 27 . . . even though such a mistake doesn't sound laic. (8,5)

- 4 Make sure of the hydrogens Urey discovered. (6)
- 5 Contained in most cans. (Sterling type, possibly.) (8)
- 6 Barely describes what might be in the low register, and obtain female identification. (2,3,10)
- 7 Leave it on a sort of high place. (9)
- 8 The magic of starry nights, by the sound of it, which someone wished to accompany you. (3,5)
- 9 See 1 across
- 15 Where your reputed best friend might live. (3,6)
- 17 What they might hope for in dank prisons, if they want a little power. (3,5)
- 18 Describing the environment of 8, perhaps. (An abbreviated state obtained from milk.) (8)
- 21 Power to attract a call for aid. (6)
- 22 The record type aren't meant to be burnt—though some engineers look them up. (4)
- 24 The front of a leaf, etc., or otherwise. (5)

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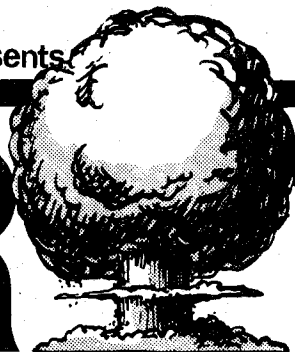
DOWN

- 2 Coming military types? (5)
- 3 A singular 20-10 serial. (3,5,7)

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